

Minicam Photography

JUNE 1948

25 CENTS

30 CENTS IN CANADA



Inside...



...Outside



ARGUS CAMERA PHOTOS

*All Around
the Town...*



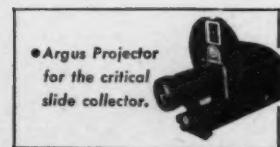
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Pick your subject. Pick your spot. Anytime, anywhere. You're always ready to shoot with Argus C-3. For it is the 35 mm. camera with added features that make good picture-taking easier.

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•Argus Projector
for the critical
slide collector.



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FILMO AUTO LOAD CAMERA

The only 16mm magazine-loading camera with all these features: lifetime guarantee; sealed-in lubrication—no oiling; positive-type viewfinder; built-in lens-setting guide for all films, all outdoor conditions. (At left in illustration.)

FILMO SPORTSTER CAMERA

The only spool-loading 8mm camera with all these features: lifetime guarantee; "drop-in" loading with no sprockets to thread, and an automatic film gate; provisions for true slow motion pictures and for animation work. (At right in illustration.)



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Minicam Photography

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22 EAST 12TH STREET, CINCINNATI 10, OHIO

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Cover by EDWIN C. EVANS from Shostal
Yosemite Falls, California

Fritz Henle
(See page 30)

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Universal clicks with
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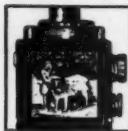
"When a customer asks us to recommend a camera, we don't hesitate to recommend a Universal Camera. You can't touch them for value or results. For pictures that click, give us a Universal every time." — Bill Winter and Jim Scarborough, Winter & Co., Los Angeles, Cal.

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CAMERA...FOR A NEW



**6 BIG
FEATURES
FOR BETTER
PHOTOGRAPHY**



1



2



3

4



5



6

1 GROUND GLASS VIEWER Reflects print-size image from lifetime mirror. Viewing hood equipped with Magnifier and Sportsfinder. The picture you see is the picture you take.

2 TWIN SYNCHRONIZED LENSES Fine f3.2 Wollensak Anastigmat viewing lens and 85mm f3.5 Wollensak Velostigmat taking lens. Both coated. These lenses are perfectly synchronized and controlled by automatic corrective parallax device.

3 LARGE ACCURATELY CALIBRATED FOCUSING KNOB Takes uncertainty out of focusing. Marked from 3 ft. to infinity. Depth-of-Focus Chart above permits quick "zone-of-sharpness" focusing.

4 SIMPLE LOADING

5 SPORTSFINDER For fast action sport shots at eye level.

6 DEPTH-OF-FOCUS CHART engraved on body of camera.

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By JOSEPH J. CANCALOSI



By DAVID J. FORBERT



By ELDON GREEN

3. Fogging the future for many careerists is the puzzler, "Which way success?" Of all the lush photo-careers open to SMP students, Canadian newsman ELDON GREEN chose the commercial field (see above). Now trained and polished, he faces the wider horizons he dreamed of.



THE SCHOOL OF MODERN PHOTOGRAPHY
136 East 57th St.

2. "Hot on the trail" of last word techniques, professional DAVE FORBERT bee-lined for SMP from deep down in Mississippi. Besides polishing portraiture (see left), he found new photo-worlds to conquer—in studios that even camera stars dream about, but rarely see. Before you could say "SMP", Forbert pocketed a prize post as photographer for Reader's Digest—International!



By FRANK PROCELLER

4. "Dream-come-to-life" sums up the case history of FRANK PROCELLER (see above). A lifelong hobbyist, he studied evenings at SMP under crack photo-instructors. Reaching professional stature, he'll open a studio specializing in industrial and public relations photography.

5. Information Please! "What about tuition fees?" Specialized courses, day or evening, are exceptionally moderate. Visit the School, or write for outline of courses. Address H. P. Sidel, director, Dept. M6.

THE LAST WORD

The Cover That Fed the Kitty

Sirs:

The midget racer shot by Jack Stevens on the April cover is a pip. As soon as I saw it I beat it down to the club and won \$10 on bets about how it was made. A lot of members of our club combine midget racing with photography but no one knew how to set up a picture like that until he read the article on page 27. The \$10 winnings went into a kitty fund to buy materials to duplicate Steven's idea. Now watch our dust!

Burbank, Calif.

EDDIE ARNHOLTZ.

Sirs:

What a cover! I can't tell you how much I enjoyed Jack Stevens' racing car picture on the April cover. Like Mr. Stevens, I am a midget racer fan as well as a camera hobbyist. The steam escaping from the motor really topped off this amazing picture. Where can I get a copy of it?

Chicago, Ill. EUGENE G. WALSCHON.

* Try contacting Jack Stevens at the address below.—Ed.

Sirs:

Thanks for the return of my midget racing car transparency. Having already received the check for \$100 for use of the transparency as a cover contest winner, the additional check for the article quoted from my letter came as a surprise. In fact, the whole thing has been unexpected from start to finish . . . but thanks!

205 West F. Street, JACK STEVENS.
San Diego 1, Calif.

* Incidentally, Jack,—and all other color shooters as well—don't overlook the announcement of the 1948 MINICAMS Cover Contest on page 29 of this issue.—Ed.

Shirt-tail Trouble

Sirs:

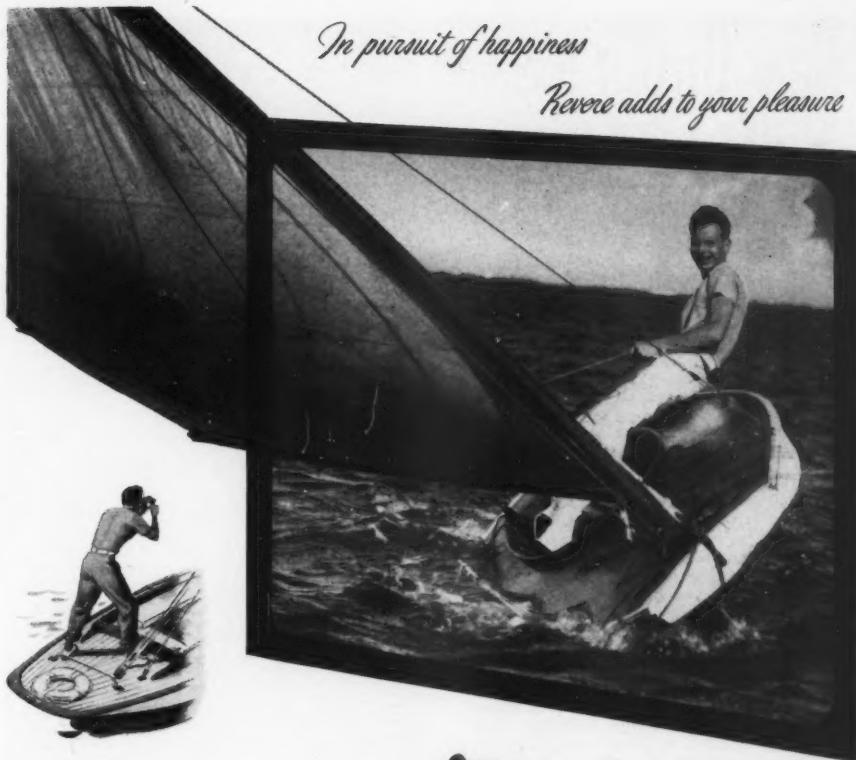
I like red meat in my reading and that's what I got in the *How To Improve Your Snapshot* articles in the April and May MINICAMS. But the printer or whoever it was that got his shirt-tail caught in the press on page 33 of the April issue sure messed things up. The answer part of the 5th *What's Wrong With These Snapshots* problem doesn't make sense. Was something omitted in this answer?

Parkersburg, Va. GILES MCFADDEN.

* It certainly was. The remedy part of the problem concerning camera movement should have read like this: "Never try to make a snapshot at a speed of less than 1/25th second unless your camera is mounted on a tripod or other steady support. Even at 1/25th second

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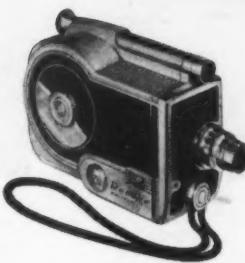


Outdoor sports are *twice the fun* when you capture their action with *movies*. In crisp black-and-white or natural colors...exactly as they happened...you'll be able to share those thrilling moments over and over again with your family and friends at home.

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CAMERA**

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Camera. F 2.8 Coated Lens.
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sional advantages

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Revere
EIGHTS and SIXTEENS

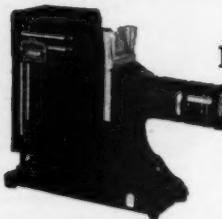
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there is bound to be some camera movement, but not enough — as a rule — to be objectionable in a small snapshot print." — Ed.

Experiment In Glamour

Sirs:

Enclosed is a photograph taken as an experiment in using the techniques advanced by Mr. W. R. Harrison in his article (Glamour Made to Order, Jan., Feb.). Part 2, on draping was the most helpful to me personally, although both articles were excellent.

Mr. Harrison deserves a lot of credit for the simple and interesting presentation of these articles despite the critical views expressed by some of your readers.



The Susie Q in my pictures is Miss Doris Logan, who, incidentally, asked me to thank MINICAM's editors for the nice things they said about her after seeing some color pictures of her that I submitted recently.

Birmingham, Ala. SIDNEY LAWRENCE

20 Years In A Barroom

Sirs:

The man who stayed ten nights in a barroom was a piker. I stayed 20 years, and now I'm about to publish the story of my life. The point is, I want to use a lot of photographs in my book. Can I take—without getting into trouble—a photo of a drunken man, a bread line, a flop house, the inside of a cocktail room, or a bouncer beating a drunk?

Los Angeles, Calif.

EARL ROCK

• Whether or not taking pictures of this type would lead to trouble depends entirely upon the circumstances under which the pictures



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What a beautiful portrait! So natural you can almost feel the dog's soft coat. Yet it is an actual $6\frac{1}{4} \times$ enlargement of the tiny area shown above... made through a B&L enlarging lens. Look at the hairline sharpness in the texture of the Dane's coat. Quite a demonstration, even though this is a printed reproduction.*

Enjoy the thrill of seeing your own negatives enlarged in true detail, subtle tone and brilliant color...use a B&L enlarging lens on your enlarger. Your FREE copy of a new folder on B&L Enlarging Lenses is available from your dealer, or on request from Bausch & Lomb Optical Co., 548-S Smith St., Rochester 2, N. Y.

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*In preparing a printing plate from the original enlargement, losses in detail have occurred at four stages: screening negative, etching original engraving, impressing wax mold, and plating into wax mold.

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OF SPECIALS

it's our 10th ANNIVERSARY!

We're 10 years old—and looking forward to serving you even better—if possible—in the next 10. But, it's you—not us—that gets all "party" treats when we have an anniversary. Look before any other place what we've got! Here's a chance to treat yourself to some desired and even hard-to-find equipment—all at prices that will have you putting yourself on the back for days—and days. REMEMBER—Order by Mail. Order Department offers superb detail-perfect service!

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All of the above cameras are Brand new imported models and have the new Flash Shutters. During our Anniversary Sale, with the purchase of any of the above models for the additional sum of \$1.95 we will include a new Flasher unit.

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Kodak Vigilant Six 20 F4.5—Flash Shutter	61.18

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4 Great Stores Coast-to-Coast



were made and used. It could be very thin ice, indeed. We strongly urge you to read "It's The Law" in the April '47 issue of MINICAM before you begin.—Ed.

Double-take

Sirs:

I had to look twice at the Picture Parade photo on page 34 of the March MINICAM.

Last summer I took a picture of my son



"working" on his car and you can see the striking similarity for yourself. May I say that this "dull, primary" reader (as another reader recently described photographers like myself in the Last Word column) gets a lot of help out of your swell magazine. Let's not get technical, huh?

North Banger, N. Y. MRS. E. McCARTHY.

We'd Have Stayed With Her Husband

Sirs:

The picture of the King Vulture on page 40 of the April MINICAM interested me greatly, and I was still more interested to learn from the caption that this particular bird belonged to a friend of mine, Mr. D. L. Mobley. I can vouch for the fact that Mr. Mobley tamed the vicious bird until it became docile enough to pet as I have both snapshots and 8mm motion pictures of myself petting the same bird. The pictures were taken by my husband—but I might add that although he stayed outside the aviary to shoot the pictures, Mr. Mobley was inside the aviary guarding my safety at all times.

Los Angeles

MRS. ROBT. BOYD.

More Monotropas

Sirs:

You can imagine my surprise when I received my April issue of MINICAM, and turned to page 42. At first I thought some one had been going through my wastebasket when my back was turned, but I take it all back.

I can see that Science Service turned out a better job than mine, but did they have to use a changing bag for a background, hold a table lamp with a 40-watt bulb in one hand, brace the tripod with their feet, and take a wild guess

(Continued on page 132)

THIS NEW MILLION MIRROR PROJECTION SCREEN

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You'll thrill to the amazing new realism . . . the clear sharpness of all your pictures when you show them on this new Radiant Screen. Here is the secret of this better performance: firmly embedded in the pure white Radiant screen surface are millions and millions of tiny glass mirrors! Each tiny mirror reflects all the brightness . . . all the natural, lifelike beauty of your pictures. Black-and-whites are more crisp and contrasty . . . colors more brilliant and true to life.

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*PAT. PEND.

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MINICOL — for miniature *Flash and Texture* photography. A soft working super fine grain developer that preserves detail in shadows and high lights on brilliantly lighted subjects.

These special purpose developers are tops, each in its own field and are used by thousands of expert photographers all over the world.

THE MOST CONVENIENT Fine Grain DEVELOPER EVER INVENTED

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- **NON-Staining**
- **Replenisher Available.**
Can be used either with or without replenisher.

Now when you are taking more pictures than ever, you will especially appreciate the convenience and economy of Edwal Thermo-Fine. QUART Size: 50c; GALLON Size: \$1.00 REPLENISHER: QUART Size: 50c.

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PHOTO MARKETS

Compiled by MAY SULLIVAN

Hudson's Bay Company. Hudson's Bay House, Winnipeg, Canada, want material that has to do with the Canadian North. Actually, a picture could be taken in the States but if it looks like a Canadian scene it could be used. Most of the photographs purchased by this publication are used to illustrate articles, but in every issue they run a spread of pictures chosen for their photographic excellence rather than for what they illustrate. Photographs must look natural. The editor points out that their magazine is edited for people who know the North and pictures they accept must have an air of genuineness about them. Rate of payment depends upon the excellence of the picture. Black-and-white only.

Independent Woman, 1819 Broadway, New York 23, New York, uses in addition to seasonal photographs featured as a cover or frontispiece, photos of women prominent in the news, especially women who are working for the advancement of women or for the other projects connected with human welfare.

A photographic competition open to the world and offering more than \$100 in cash prizes has just been announced by the Iowa State Fair and Exposition for its 1948 Photographic Salon.

Eighteen different sections ranging from action photos to still life subjects are offered in this year's classification. The list includes a special class for colored photos.

Dates for the 1948 Iowa Fair are August 25—September 3.

Photographers desiring to compete in this year's event may obtain complete premium list on request to L. B. Cunningham, Secretary, Iowa State Fair, Des Moines, Iowa.

Dutch Boy Painter Magazine, published for National Lead Company, Room 1815, 111 Broadway, New York 6, New York, is interested in purchasing pictures of homes, landmarks, outstanding buildings—preserved with paint of National Lead Company's manufacture. Also pictures of painters at work. \$5.00 to \$10.00 is paid on acceptance of photographs. Black-and-white only.

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The National Geographic Magazine, 16th and M. Sts. N. W., Washington 6, D.C., requires for publication black-and-white and natural color photographs showing artistically and naturally the physical characteristics of every country and the manners, customs, activities and costumes of every people. A most important requisite of the picture is pictorial effectiveness obtained through careful attention, in treatment of subject, to composition and arrangement. Whenever possible photographs should include people, preferably in action. Generous rates are paid for photographs upon acceptance, but these prices vary widely due to the conditions under which the pictures are made and acquired. Full information must accompany each photograph. Prospective contributors should make a careful study of several issues of the National Geographic Magazine and analyze pictures already published.

The Oklahoma Transporter, P. O. Box 814, Tulsa 1, Oklahoma, is in the market for photographs pertaining to Automotive Transportation covering such subjects as trucks on the open road, wrecks, fires, new or unusual equipment, repair shops, etc. With each photograph, or series of photographs, there should be a brief explanation of 50 words or less. Prints should be 8x10 glossy and should have a commercial release. Payment of \$2.00 to \$5.00 per picture will be made upon acceptance. All material submitted should be accompanied by self-addressed stamped envelope.

The Apostle, 8800 S. Archer Avenue, Willow Springs, Illinois. This publication is interested in Catholic religious subjects only. Human interest photos of priests, monks, nuns, ceremonies, children or adults praying, any subjects in Catholic religious atmosphere, etc. Black-and-white only. No architectural, scenic or mission shots wanted. Any size acceptable, providing detail is clear. \$2.00 per photo on acceptance. Return postage must be included.

Hastings House, Publishers, Inc., 41 E. 50th Street, New York 22, New York, will purchase pictures of scenic and architectural points of interest of Northwest Rocky Mountains, New York State, the South, California and the Midwest. These pictures should be as sharp and as full of contrast as possible inasmuch as their process of reproduction—sheet-fed gravure—tends to soften the photographs. Payment is made at the rate of \$5.00 for one-time, non-exclusive use.

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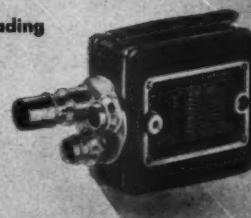
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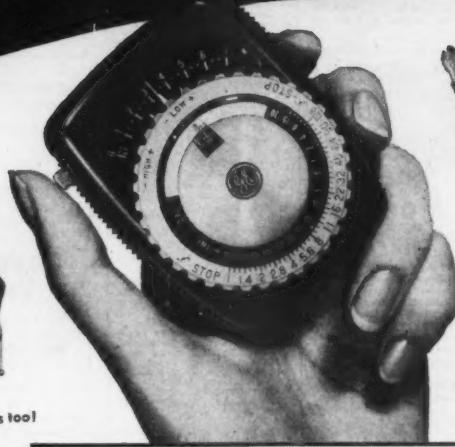


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CONTEST INFORMATION

ALL photographers are eligible for this 4th Annual Cover Contest which opens on June 1st, 1948. There is no limitation on subject matter, but color material must have been exposed by entrant. Must never have been published.

Transparencies must be at least $2\frac{1}{4}$ inches in the shortest dimension . . . larger transparencies preferred. Because of production difficulties, 35mm slides cannot be considered for covers. When sending these for editorial use, please do not address Cover Contest.

Each entry must be properly identified with the contestant's name and address, securely wrapped, and accompanied by return postage. Address all entries to: Cover Contest, Minicam Photography, 22 East 12th Street, Cincinnati 10, Ohio. All submissions must be postmarked no later than September 16th, 1948.

All color shots will be returned whether they are accepted for publication or not. The editors plan to purchase color material for use inside the magazine. One hundred dollars will be awarded to each cover winner; Honorable Mention awards—subscriptions to Minicam—will also be given. Look for the winners' names in the December issue.



AND WHAT IT MEANS

HERBERT LANKS—BLACK STAR

A down to earth discussion of the problems of exposure, with special reference to the incident light method of exposure determination

By Milton G. Herbert

AMONG THE FACTS about light thus far discovered, a photographer is particularly interested in how light varies in *type, quality, color, and intensity*. Each of these must be considered before a "perfect" negative can be obtained through proper exposure.

There are two basic types of light—*incident* and *reflected*. Incident light is the most common type, because without it there can be no *reflected* light. The natural source of incident light is the sun, while artificial sources of incident light vary from the flare of a match to the continuous glow of a light bulb. Since we have no control over the source of natural

light, we must interpret the amount of incident light falling upon a subject in order to obtain a properly exposed image upon a negative. With artificial light it is a different story. We can move the

THE BRILLIANT LIGHT of the sun, reflected from sky, sea, and sand often causes acute exposure headaches when shooting color material. A reflected light type meter, unless used intelligently, may give you overexposed background and underexposed flesh tones in a shot such as this. Even if you remember to "refrain from using a stop smaller than F:11 when using color on brilliant beaches" you sometimes have trouble. Incident light readings are balanced to give more correct flesh tones when using color film.

PHOTO BY BILL FICKLIN



sources of our incident light about at will, increasing or decreasing intensity whenever necessary in order to arrive at a set standard of exposure.

When incident light strikes an object it is either absorbed, or reflected in varying degrees. This ability of every subject to change and affect reflected light provides the basis for our perception of brilliance, color, texture, and gradation. A brilliant subject reflects a large quantity of incident light, while a dark subject absorbs it. No matter what the intensity of the light source may be, a dark object remains dark and a light object remains light if they are illuminated by the same source. Since the reflectance value remains the same in both, correct relationship of lights to darks will always remain constant (within the limits of the film in use), provided a light meter is properly used to measure the *incident* light falling upon an object.

Light and Your Film

The film that you use, generally speaking, consists of a light-sensitive emulsion which is coated in a thin layer upon a clear celluloid.

When the light falls upon this emulsion, a chemical reaction takes place in the silver salts. Developing turns the areas which have been exposed to the greatest amount of light to varying degrees of black and, while development takes place slowly, it is possible to develop the film to a point where almost all of it is a solid black and very little tone, or gradation, is left.

If we change the type of film, we have another factor which enters the picture—the one known as *film speed*, or *exposure index*. This factor is designated by a series of numbers which has been established by the American Standards Association and known as the *A.S.A. Exposure Index*, or by a similar set known as *Weston Film Speeds*. These numbers simply indicate the relative speeds of the films available today.

To get a clearer idea of the action of light upon the emulsion of the film, we can compare it to water running from a faucet. As shown in Figure 1-A, the fau-

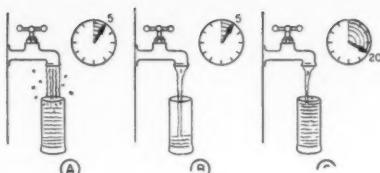


FIGURE 1

set is turned on full and the glass fills in, say, 5 seconds. At B, however, we have closed the faucet part way and in 5 seconds we find the glass only partially filled. To fill the glass, at this reduced flow, we must allow the water to run 20 seconds, as shown at 1-C.

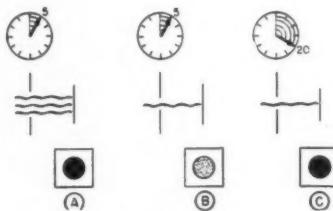


FIGURE 2

In a like manner, light affects the silver in the emulsion of our film. In Figure 2-A we see that a large amount of light quickly turns the silver black. Cutting down the quantity of light, as at 2-B, only turns the silver to a light gray in the same amount of time. Now, if we continue to expose the film to the same amount of light we find that it will turn black in 20 seconds. In other words, a large amount of light acting for a short time upon a photographic emulsion will produce the same effect that a small amount of light does at a greater length of time. We refer to the amount of light and portion of time by one word—*exposure*.

Controlling Exposure

Since exposure can be controlled with both time and amount of light to produce the same effect, we must have some means of regulating these factors on the camera. Most cameras provide a light control called an *iris diaphragm*. For controlling

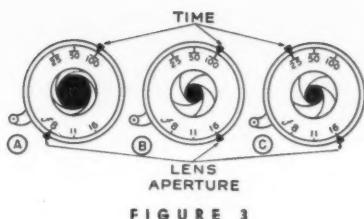


FIGURE 3

time a *shutter* is installed. Used in conjunction, they have the same effect as the faucet and time in Figure 1, and the amount of light and time as in Figure 2. This is shown in Figure 3.

Shutter settings are easily compared as each setting is either one-half as much, or twice as long, as its adjacent setting. Iris diaphragm markings or *stops*, however, are not as easily compared. The important thing to remember, though, is that F-numbers 4, 5, 6, 8, 11, 16, 22, 32, indicate successive decreases of one half in light intensity. Thus, F:8 admits twice as much light as F:11 and, conversely, F:32 admits only one-half as much light as

F:22. Knowing this, we can obtain identical exposures from any of the following combinations: 1/25-sec. at F:22; 1/50-sec. at F:16; 1/100-sec. at F:11, and 1/200-sec. at F:8.

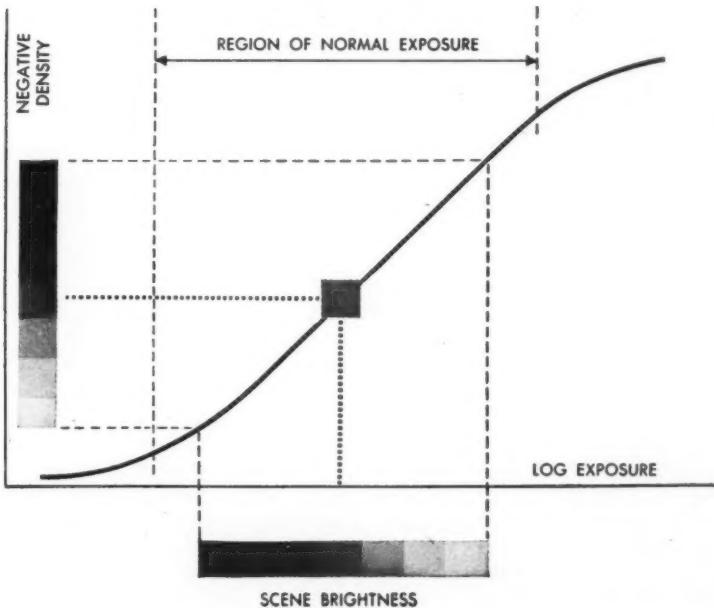
What is Correct Exposure

Correct exposure is a much abused term which refers to that combination of light condition and camera adjustment which will produce a perfect negative or color transparency. A perfect exposure reproduces the subjects in the original scene as closely as possible.

Most subjects consist of areas of varying brightness. These areas are reproduced on the film in degrees of tone, from black to white, which are called *gradations*. These gradations are represented by a series of gray tones which become lighter, as shown in Figure 4. The light that enters the camera exposes the film to these various tones as depicted along the horizontal line labeled *Log Exposure*.

The response of a particular film to the various brightness values is represented

FIGURE 4



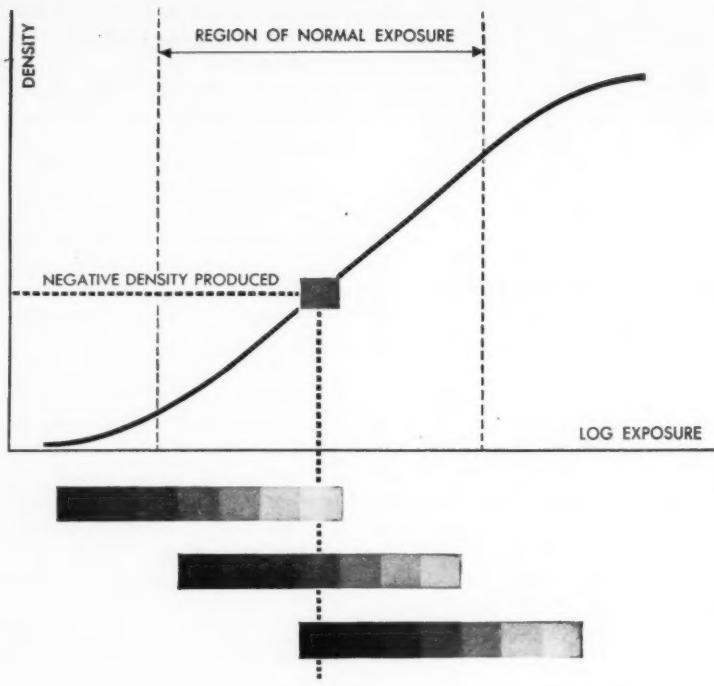


FIGURE 5

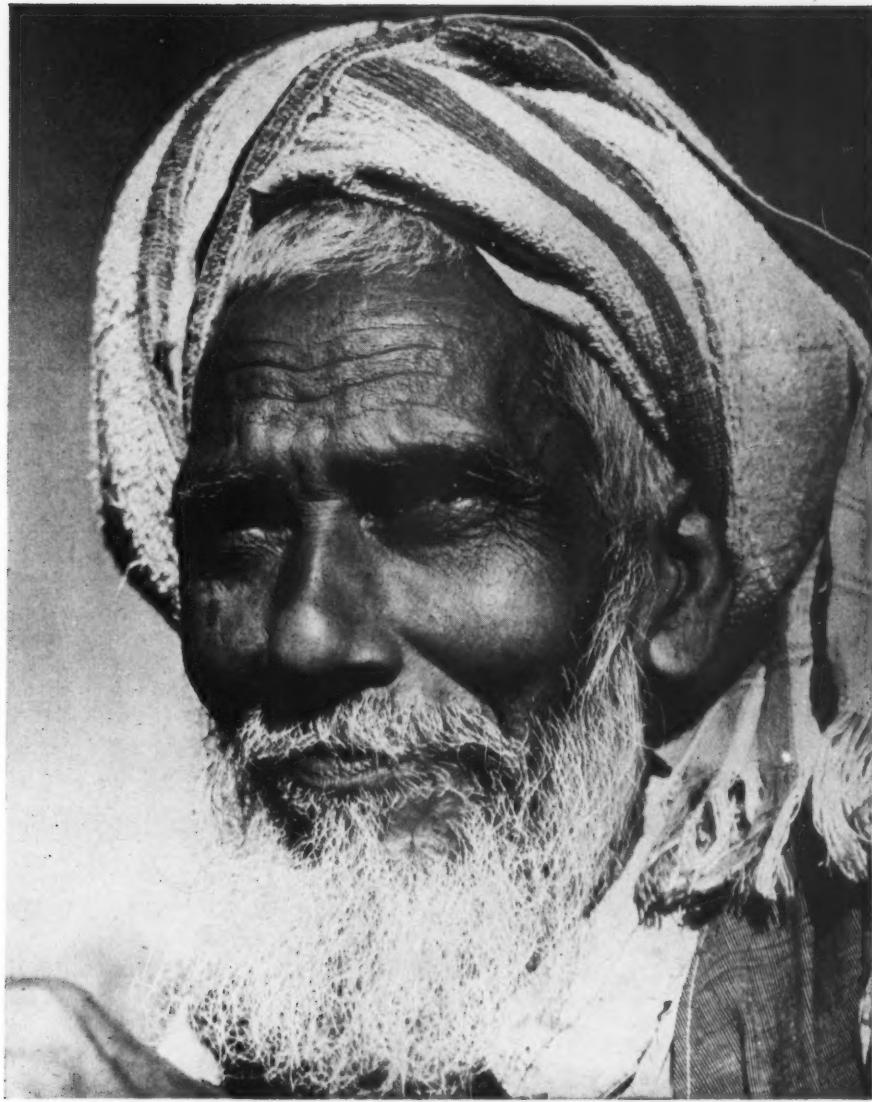
by a curve resembling a flattened "S". To accurately reproduce each value of brightness in the scene, the band of gray tones representing the subject should be located directly under the straight line portion of the diagram, as shown by the dotted lines in Figure 4.

By altering the camera adjustments, to gain greater or less exposure, it is possible to move the band of gray along the horizontal line in either direction, as in Figure 5. If underexposure is given, the band moves to the left and we have a short tonal range with gray predominant. In overexposure, the band is moved to the right and the lighter shades are crowded completely off the scale. It will be noted that in underexposure the lightest tone of the subject falls beneath the middle point of the curve and this light tone is reproduced as a medium gray on the negative density scale, while the dark grays go completely black without detail.

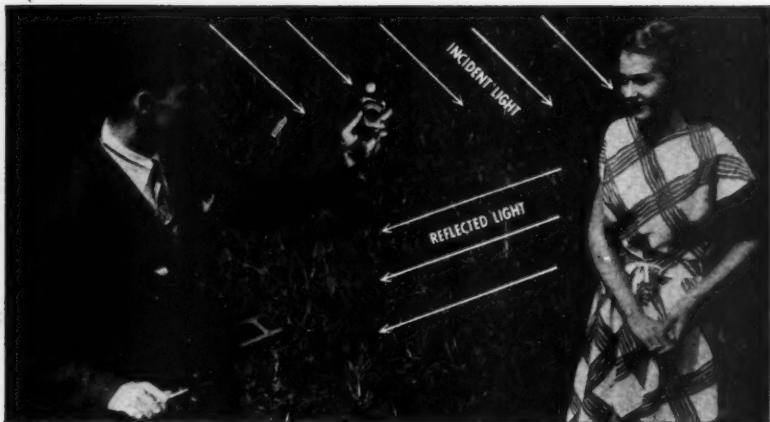
The center band of grays, in Figure 5, show how they are accommodated upon the film emulsion when correct exposure is given. The band showing overexposure graphically illustrates how the darkest gray falls under the center point of the curve and is reproduced as a medium gray, while the lightest gray comes under the shoulder of the curve and will be reproduced as a detailless white in the final print.

Determining Exposure By Meter

As we stated before, the intensity of light varies over a considerable range—a range that can be expressed as covering a ratio of over 100,000 to 1. While photographs can be made "by guess and by gosh," unless the actual value of the light condition is known only a few of them will be exposed correctly. The only consistently accurate way to interpret the value of light is by an *exposure meter*.



IF YOU THINK this one is easy, in color, better make sure you have a gray card along. It will aid you in obtaining a more nearly correct exposure with one reading of a reflected light type exposure meter. The intense sky, bright turban, and white beard may cause a false reading resulting in underexposure of the flesh tones and shadows. Either the gray card method or several averaged readings is the answer. *Berko Photo.*



THERE ARE TWO basic types of light — Incident and Reflected

Exposure meters, like light, are available in several types; those which record and interpret reflected light and those which can either be adapted to, or are designed especially for, incident light.

Among the reflected light types we also find various categories: the photoelectric, the extinction, and the comparison. Incident light types are all photoelectric.

Of these various styles, the photoelectric is the most practical method yet devised for it can cover a much greater range of light intensities with less error than the other styles. In its construction it embodies a photoelectric cell which is connected to a sensitive electric meter. The meter is so scaled that the light value can be read off and the correct exposure

INCIDENT LIGHT reading is obtained by pointing the meter at the camera





AN INTERRUPTED TASK

A SUBJECT like this will cause you to distrust *both* types of photoelectric meters. You needn't, though, for the situation is rare and good results can be obtained by averaging several readings. Reflected light types will give the best answer—but neither will guarantee completely satisfactory results with color film. *Photo by R. W. J. Norton, A.R.P.S.*



PHOTO BY KAYE SLOANE

THE ONE SITUATION in which the incident light type meter must bow out and become a reflected light type. If you are located inside a building, in a canyon, on the shady side of a mountain—or in a woods, such as this—then

you should resort to an accessory and adapt your meter to reflected readings. With reflected light type meters which have been adapted to incident light use, it is only necessary to remove the adapter to obtain an exposure reading.

determined by consulting an easily operated calculating wheel. Most photoelectric meters have some means of baffling the light rays so that readings may be taken in both subdued and brilliant light.

Early photoelectric type meters were invariably made to take only reflected light readings for a number of reasons. First, the light reflected by a subject was the same light that entered the camera and it was believed sufficient to expose for this light only. Second, no simple means were available at the time for measuring incident light; third, since only black-and-white film was being marketed, greater accuracy than that afforded by the natural latitude in such film was not considered necessary.

The Wrongs of Reflected Light

The chief disadvantages of reflected light as a basis for exposure are the variables that influence a reading under any thing other than ideal conditions. Supposing, for example, that you set out to photograph a subject against a dark background. If you take a single reading from, let us say, the camera position, the dark background will influence that reading and the highlights in your subject will be burned out with over-exposure. This is because the background, being dark, gave a lower reading from reflected light than should have been used for the subject. To compensate for this low reading it would have been necessary to approach the subject and take an unshadowed reading of it alone. Oftentimes this is not possible.

In a like manner, if the background is extremely light and you expose for a reading taken at, or near, the camera position you will generally find that the subject has been underexposed because the meter recorded the light background and gave a higher reading than was required to portray the subject.

This condition holds true whether the picture is taken indoors or out, as long as the meter reading is taken from one position. For critical exposure, it is necessary to take two or more readings—one of the most brilliant highlight and one

of the deepest shadow and, perhaps, one of the middle tones. These readings are then averaged and the exposure meter adjusted to give a solution that will arrive midway between them.

An alternate method of using a reflected light type meter without resorting to several readings and striking averages therefrom has to do with the use of a neutral gray card. (See New Products, pg. 92.) Light reflected from a neutral gray card (which approximates the midway point between extreme light and dark portions of a scene) can be measured with considerable accuracy on a single reading. The usual procedure is to hold the gray card at the subject position, facing the camera. A reading is taken with a meter held close to the card—and since neither the background nor the brilliance of the subject can influence the reading, it is more accurate than a general reading of the scene. The chief drawback of this method is that it is cumbersome and slow.

The Measurement of Incident Light

In a manner of speaking, the gray card method owes a part of its success to the fact that a fixed percentage of the light the gray card reflected was *incident* light.

Today there are several exposure meters on the market which measure incident light. With one exception, they are meters that have been adapted to the integration of incident light by the addition of auxiliary means for taking readings. The exception is the Norwood Director, a meter originally developed for professional use, but which has recently been brought within amateur reach by redesigning and a new marketing policy.

The difference between the Norwood and the reflected light meters that have been adapted to incident light use, is at once apparent. The reflected light meters have a flat cell with a narrow acceptance angle. They cannot, because of this structural feature, integrate the spill light that may be coming onto the side of the subject.

However, in the design of the Norwood meter, all the inherent accuracy of the

incident light method of exposure determination can be realized. To begin with, the light receiver for the photo-electric cell is spherical in shape. It gathers the light that will affect the subject from all forward angles that face the camera. For the few conditions that arise where direct incident light cannot be easily measured, the meter can be converted for use in taking reflected light readings. The accessory is small and does not exceed the approximate dimensions of a stack of three half-dollars—which pays for the cost.

All that is required to use the meter is to point the Photosphere at the camera and read the correct exposure from the calculating dial.

The needle of the meter is well damped (a shock absorber action) so that there will be no indecision as to what reading it indicates. If the Photosphere is not *exactly* pointed in the right direction, no harm is done. Because of its use of incident light to arrive at correct exposure, this is the only meter with which you can take this liberty and still maintain a high degree of accuracy.

Now, let us see why this is so. Remember back in the first part of this article we said that the reflectance value of various objects remains the same regardless of the amount of illumination? That a dark and light object side-by-side will appear the same under all conditions if they are illuminated from the same source? That is your answer. With an incident light meter you measure the quantity, or intensity, of light that is falling upon your subject—not the amount of light that the subject reflects. In this way the readings are not affected by specular reflections.

And while we are talking about incident light readings with the meter pointed *toward* the camera, let's "scotch" the silly rumor that invariably crops up that you *must* take an incident light reading from the subject's position. The usual aside is—"How are you going to climb down into the Grand Canyon and up the other side to get an incident light reading?" This barb is two edged, and it is more cutting

TAUGHANNOCK FALLS is a difficult subject to photograph because it is located at the end of a deep canyon. For good color rendition in movies, it is necessary to make your set-up in mid-morning and await the best light. Problems for the still photographer are lessened somewhat because better control of exposure is possible. However, contrast here is so great that a slight error in taking a reflected light meter reading can cause serious over or under-exposure of both Ansco Color and Kodachrome film.

PHOTO BY BILL FICKLIN

for the reflected light meter user than for the owner of an incident light meter.

Let's compare the two. Supposing you *did* wish to picture the Grand Canyon and wished to do so with color film so that some of its magnificence could be captured for your future pleasure. How would you go about it with an incident light meter? Why, just hold the meter a short distance in front of the camera lens, read the meter, adjust your camera, and shoot. If you are shooting from hand-held positions, the meter reading is taken from where you are standing *as long as the light at your location is the same light that illuminates the subject*. Do you have to climb the canyon's walls? It doesn't appear so. If you are standing beneath a tree to take advantage of the shade, all that you have to do is step out of the shade, take your meter reading, and step back again.

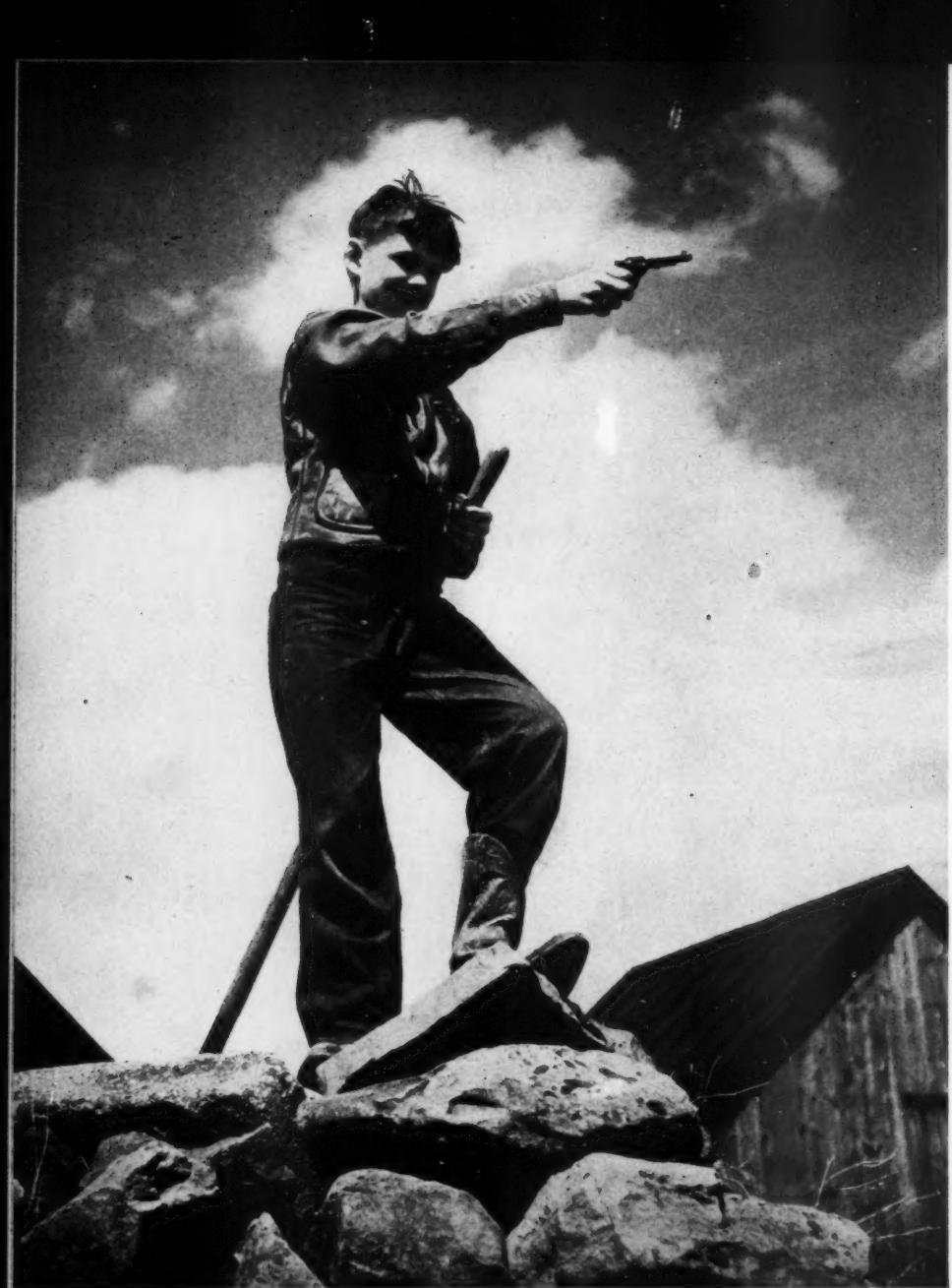
For that matter, if you were using a reflected light meter, you would be the one to perform the mountain goat stunt of climbing the canyon walls—if you wanted a correctly integrated reading that would take all reflectance values into consideration. You could, of course, resort to the gray card method, but then the majority of scenes that you photograph would have to be exposed in this manner and this equipment would be in use most of the time. We're talking of color, remember.

The Wrongs of Incident Light

As we stated before, there are conditions where the use of the incident light meter requires an accessory, if you're after correct exposure. That condition arises

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JUNIOR ON HIS STICK HORSE pointing his "six-shooter" at the outlaws affords an ideal medium close-up with sky background.

COWBOYS AND INDIANS

By Edison Thomas

THE SPELL OF A WESTERN movie thriller doesn't end when the audience leaves the theatre on a Saturday afternoon. For better or worse, mock six-gunplay and cowboy heroics still play a lead role in children's never-ending world of make believe. As amateur movie makers, we can produce a pint-size saga that stars our own offspring, and better still, will catch them doing something naturally and enthusiastically.

In short—a Stick Horse Opera.

Do you recall the essential points of a horse opera plot? First, the stagecoach carrying the heroine is held up. The hero appears—saves the day—chases the outlaws. "Love" interest begins. Outlaws capture heroine's father. Hero again saves day—this time kills outlaws in terrific battle. The kiss-clinch, with boos and aaahs from the balcony. Gallantry wins again!

Substitute a stick for a horse; lop a few years off the actors' ages, and we'll

MASKED OUTLAWS CROUCH with drawn guns as a stagecoach comes lickety-split around the bend. What better setting for movie action?



have a home movie. It won't win an Oscar, but our movie will draw a chuckle from the neighbors in the living-room audience, especially if we throw in some hot buttered popcorn.

The best still picture records of our children are completely "unposed" shots. They preserve that memory-elusive facial expression, or select an occasional choice event from the busy flow of a child's development. Movies can do the same thing, but to keep a home movie interesting it must have a plot. Why? Because a movie has *motion*. It begins, has a continuity, and ends. It's not a single image. Between the beginning and the end a problem must be solved, or our effect is that of a series of animated shots. A "shooting script" is the means a producer uses to insure continuity.

Before actually laying out the shooting script, here are a few points to consider.

We're primarily doing a burlesque. It will be serious business with the kids, and we certainly want to shoot the movie the way they play the game. That will be funny enough in itself to us. Our only job is to direct the action just enough to

hold the thread of the story. Such refinements as painted sets, elaborate costumes and props are not only unnecessary, but would probably strike your audience as a bit ridiculous. And if the hero of the cast happens to be scratching his backside in the midst of a crucial scene—so much the better.

Location: literally any place. Shoot some of the epic in the backyard, some in the front, on the porch, in back of the garage, a vacant lot, the rockgarden, up in the attic, down in the basement. A nearby park is a good spot. Best location of all is Uncle George's farm.

Ask Junior what movie he is going to see this Saturday afternoon. It may turn up with a title like "Fearless Roy Rides Again", but you can bet your best pair of Western boots that it's a genuine horse opera.

You say, "Do they still make those things?"

They do, and if Junior loves them so well produce and star Junior! And while you're at it, why not accompany the potential movie star in your family and see just why "Fearless Roy" is the idol of

THE BARNSHED at Uncle George's farm serves as a convenient cliff from which our hero foils the stagecoach robbery.





THE HORSE OPERA has a hole in it unless the hero produces his guitar and strums a romantic ballad to the rancher's daughter. Close-ups are ideal for this scene, and with the playing of a recorded cowboy song when you project, the movie receives a nice change of pace.

Junior and about a hundred other small fry who will jam the theatre that afternoon. Then too, if you can stand the shower of popcorn, exploding paper bags and the zillion and one other things that happen when a houseful of young humanity in perpetual motion gets turned loose, try to absorb a few pointers.

The story won't matter much. Basically they are all the same, and besides, Junior won't let you slip up. All you need is the gist of the action—you can pick up from there and practically ad lib your way through this proposed colossal horse opera—complete with stick horses.

Let word get around the neighborhood that you are filming a genuine western movie complete with cowboys and Indians, and your cast will magically overflow your backyard—usually in appropriate costume. Just in case you'd like Junior to stand out from the rest of the cast, perhaps a little

more thought should go into his costume. The cowboy suit he got for Christmas, if it lasted this long, will be swell. He should be able to find enough props from his play room, including cap pistols, to equip himself with the regulation two that "Fearless Roy" always carries.

If you need Indians an old feather duster and a few cloth headbands will work wonders, and most of the eligible extras will be glad to bare chests for the good of the cause.

The horses are broom sticks. For very young children horse heads can be cut from cardboard and tacked on for realism.

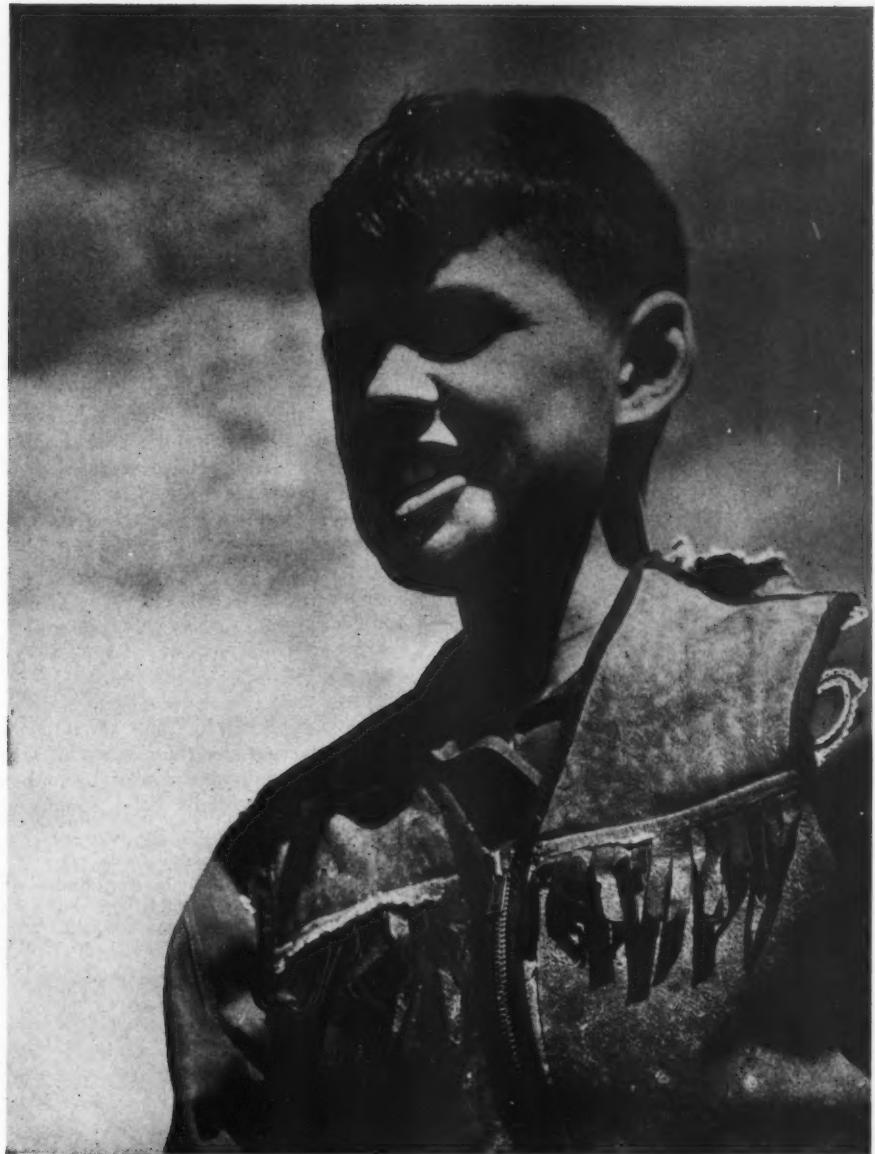
With a little ingenuity, Junior's coaster wagon can be converted into a stagecoach, or—if necessary—a covered wagon.

Almost the entire action can be filmed outdoors. Your wife will thank you for that. But if you must include indoor

(Continued on page 137)

DRAMATIC MOMENT COMES when Junior, as the hero, comes a-riding in on his trusty steed and foils the outlaws in their hold-up attempt. Cut action with close-ups to add interest. These can be filmed separately and spliced in.





WHEN JUNIOR SAYS "reach for the sky, podner!" you can bet he means just that. Whether it's in the script or not, there will be plenty of times when Junior will burst forth with his victory yell and bounce across the scene beating his broom stick horse.

Outdoor Color Photography with the CC14 and CC15 Filters

BY SEYMOUR MILLER

ONE of the least publicized and most useful aspects of outdoor color photography is the use of the Kodak Color Compensating Filters Numbers CC14 and CC15. Color enthusiasts, in rapidly increasing numbers, are beginning to recognize the adaptability of these versatile filters towards correcting and modifying light to suit the tastes and purposes of the photographer.

Color photographers have been told for so long that there are no filters to use in outdoor color photography, with the exception of the Pola-Screen, that many of them have become discouraged and have come to believe that they will never be able to control light quality with outdoor color film. The above statement is true to the extent that there are, as

yet, no filters available for outdoor color photography which will perform the exact same functions of such filters as K2, G and A used with panchromatic and orthochromatic emulsions. However, the CC14 and CC15 filters have certain special uses which will greatly aid the photographer in overcoming some of the perplexing problems of outdoor color photography.

The uses of these filters are three-fold:

- 1) They work to counteract the blue cast of color film in clear, rarefied atmosphere at relatively high altitudes, and in all outdoor scenes with expansive areas of blue and green.
- 2) They accentuate color mood of an already predominant color by making the over-all color balance warmer (yellower).

HIGH ALTITUDE shot taken in Hawaii by Perry D. Griffith, is typical of the green and blue color composition which oftentimes goes too blue. Although the CC14 filter will reduce the blue cast, don't expect it to penetrate haze to register distinct details.





WARMING a cool scene such as this one by Emil Hinriches, is a job for the CC14 filter with outdoor color film.

- 3) They add "warmth" to scenes which are excessively cool by reducing the tendency of color film to accentuate blues.

Here, at last, we are beginning to receive aid in solving four vexing problems that become the concern of the photographer once he has become determined to advance beyond the most elementary stages of color photography.

Let us look more closely into the uses of these filters and see how we may adapt them to everyday color problems.

Counteracting Blue Cast

All of us, at some time or other come across expansive scenes of water, trees and sky—color compositions which are predominately blue and green. Depending on the light and general atmospheric conditions, these scenes usually have a

blue cast which color films like. They "go for" this blue cast with such a vengeance that they are likely to shirk their duty in registering all other colors. What causes this blue haze? It is simply that excess moisture in the atmosphere produces a haze barrier that color films do not adequately penetrate. We see this as the "blue haze." Here we should be careful

* Kodak Color Compensating Filters are available either individually (Series V, \$2.25—Series VI, \$2.80) or in a set of seven with case (Series VI, \$25.60—Series VII, \$30.50). The CC13, CC14, and CC15 are yellowish filters (for warmer rendering)—the CC3, CC4, CC5 and CC6 are bluish filters (for cooler rendering). Since the CC3, CC4 and CC13 filters are quite pale, no allowance in exposure need be made. Use $\frac{1}{4}$ to $\frac{1}{2}$ stop more exposure when using the CC5 and the CC14, while the CC6 and CC15 filters will require $\frac{1}{2}$ to $\frac{3}{4}$ stop more.

and warn that the use of this filter, although it will reduce the blue cast, will not appreciably cut through the haze to register distant detail. There are other filters available to achieve the same end, notably the Harrison Coralite C $\frac{1}{2}$. Do not use a filter stronger than this or the CC13 or CC15 filters as your picture may result in an overall cast of the filter color which you may object to even more violently than the blue cast which you are trying to eliminate.

Still, we must use some caution with the filter for this purpose. Was your shot taken early in the morning? Remember that at that time of day the light is much "warmer" than it is in the middle of the afternoon. The air is much clearer early in the morning and much of the haze that appears later in the day is not yet with us. The thing to do is to decide for yourself whether or not you think the haze present is particularly objectionable. If it is, use the filter, the CC15 having a slight edge over its predecessor for this purpose. If not, leave well enough alone. A thoughtful photographer will always take careful consideration of atmospheric conditions, weighing them carefully with his planned composition.

Accentuating Color Mood

Another important use of these filters lies in "adding" color to scenes which are already of one predominant color by making the over-all color balance warmer. In depicting fall foliage and in photographing desert country in the Southwestern part of the United States, these filters become extremely valuable.

Last fall I decided that I would attempt to capture the pastel-brown color of autumn leaves. I wanted the scene to convey a feeling of "warmth" and autumn such as golden aspens high in the mountains are wont to do. Because of the general unavailability of color film until late fall last year, I reached the park only to find that my light yellow foliage had rapidly faded into a deep brown, crusting the leaves into a brittleness that greatly lowered their ability to admit translucent

light. I reasoned that the filter would "warm up" the color of the leaves to such a point that the resultant transparency would show a color of the intense golden brown color that I wanted. The resultant slide confirmed my every hope. What I had achieved was to successfully alter the color quality to correspond to my purposes.

In the Southwestern part of the United States there are many expansive colorful areas of desert country, limestone walls and sandstone cliffs. We are not always fortunate in being able to picture these formations at their best, even when conditions seem perfect. Isn't the sun shining? Isn't the atmosphere clear? Then why shouldn't your transparency, assuming you exposed it correctly, come out just as you actually saw the scene? The answer is that conditions were *not* right. You only *thought* that they were! When the earth is very dry, it reflects little color, especially when there has been no rain for a long time. On these dry, hot days the distance is likely to be diffused by heat waves. But, on the other hand, when these surfaces are wet or damp, the atmosphere is exceptionally clear and they reflect much *more* color than they do on warm, dry days. Since we cannot squat in one place for days at a time, waiting for conditions to change, we would do well in employing our Correction Filter to increase the color warmth.

In photographing flowers, a favorite hobby of millions of amateurs, these filters are likewise successful in warming up the color renditions to give a much more sunnier feeling. We must remember, however, that most light colors are highly reflective, and that some yellows reflect up to 95% of their own color. Therefore, there is no practical use of these filters to warm-up colors which are already highly reflective. Nature is already more efficient than our filters could ever hope to be. By giving other weaker and less reflective colors a greater chance to register in flower scenes where there is a predominance of blue and green colors, we can

(Continued on page 135)



ALBERTO MARX

COLOR MOOD may be accentuated, particularly when one color predominates. On dry, hot days in the Southwest, distance is likely to be diffused by heat waves. When the earth is very dry, it reflects very little color. Since you probably won't want to wait for rain to clear the atmosphere, use the CC14 or CC15 to warm the color balance.

JERRY ANSON



a way to better pictures

Synchro-Sunlight

By EARL THEISEN

ILLUSTRATIONS BY THE AUTHOR

THE OUT OF DOORS portrait showing a subject squinting into the light is the expression photo finishers say they see most often. The enlightened photographer gets natural expressions by having his subject turn away from the sun and by illuminating the resulting face shadows with flash.

This method of wedging natural sunlight to flash is called "synchro-sunlight" photography. The term *synchro-sunlight*

means simply that natural sunlight provides the over-all illumination for a picture, but at the precise instant the shutter is clicked a flashbulb synchronized with the shutter illuminates the shadows.

Advantages of Synchro-Sunlight

Before flash was introduced, reflectors were often used to throw light back into the dense shadow areas on a subject. Reflectors are cumbersome, and often fail

SYNCHRO-SUNLIGHT shot made with basic exposure system which was 1/200th second at F:11 at a distance of 6 feet. Illuminated shadow permits ready study of Linda Darnell's face.

SAME SETTING and position but a straight shot without flash fill-in. The same exposure was used. Here the deep shadows on the face are anything but complimentary to Miss Darnell.





REFLECTIVITY of sand, clouds, or other light-colored objects is often great enough to make the shadows transparent so that synchro-sunlight is not needed.



FLASH FILL-IN makes this kind of picture possible. Without the addition of flash, the shadow under the umbrella would be too dense to show what the model looked like.

to illuminate as much shadow area as might be desired.

With flash to provide shadow illumination, the photographer's control of lighting and posing problems is vastly improved. The background can be darkened to make the model stand out in relief, novel lighting effects are possible, and on days when there is little natural sunlight, artificial highlights may be made. Since there is no bright light in the subject's face until the split-second a bulb is popped, the model can pose with natural ease. The exposure will be made too quickly for any squint that may result from the glare of the flashbulb to register on film.

Synchro-sunlight pictures can be made with any camera that has a flashgun synchronized with its shutter. On the yardstick of "costs and results," they are worth it.

Basic Exposure

Every photographer has his own pet system for shooting synchro-sunlight pictures, but in the final analysis one system is much the same as the next. With Super Pan Press film and No. 5 flash bulbs, I use a basic exposure of F:11, 1/200th second at 8 feet flash-to-subject distance for normal sunlight. This basic exposure, I might add, takes for granted the use

of a slow, fine-grain film developer such as Microdol or Ansco 135.

Variations from my basic exposure are made in accordance with the specific results desired. If a shutter speed of 1/100th second were used at F:11, longer exposure would be given the sunlight while the flash, of course, remains the same. This would result in darker shadows than were obtained with the original basic exposure.

If, on the other hand, it is desirable to make the shadows lighter, the flash may be moved in closer to the subject. If moved in to a distance of, say, six feet,

the shadows become very transparent, the sky begins to darken, and the foreground subject or anything near the flash becomes lighter in tone. The closer the flash approaches the foreground subject, the more it tends to overpower the sun. This being the case, exposure at shorter distances is based upon the flash instead of the sunlight—particularly when the sunlight is not intense.

For close-ups or when the flash is nearer than 8 feet from the subject, a smaller F number must be used; otherwise the subject's face will become over-exposed and

LOW SUNLIGHT may be too weak for good photography. Artificial highlights on Jeanne Crain were obtained with multiple flash. One bulb was at the camera, the other at the end of an extension held in approximately the same position as that of the sun. This flash should be about 20% closer than the one at the camera.



chalky. If my basic exposure is F:11 at 200th second at 8 feet and I move in for a close-up at 4 feet, my stop is then F:16, or even F:22. This of course produces under-exposure for the sunlight, hence the background and sky becomes darkened.

If the same effect of a darkened sky or background is wanted in longer shots, the camera may stay back while the flash is moved in by means of an extension cord. Again I want to point out that there is great flexibility and little chance of failure. I would even go so far as to suggest that for the first try you simply put a bulb in the battery-case and shoot a picture the same as you would if your exposure was based upon ordinary sunlight. Whatever the result, it is almost certain to be a great improvement over anything done without flash. As you become adept with flash many novel and interesting lighting effects are possible.

When is Flash Called For?

The nature and hardness of natural sunlight varies, and an exposure meter is valuable for determining whether or not flash should be used to illuminate shadow areas. A meter reading should be taken on both the highlight and shadow side of the subject. Although most films boast a latitude great enough to take care of just one stop meter-reading difference between highlight and shadow areas, more than one stop difference calls for synchro-sunlight technique. A difference of two stops, for instance, might not be too objectionable in over-all effect without synchro-sunlight, but the shadows would in all probability be dark enough to obliterate face details.

The above is based on a lighting effect where the sun is at right angles to the camera and produces areas of shadow over important portions of the picture.

For backlighting effects where a shot is made almost into the sun and all important parts of the picture are in shadow, the sun cannot be considered and exposure should be made according to the proper flash guide number. We'll come back to the proper use of guide numbers for synchro-sunlight pictures in a moment.

At the beach where there is light-colored sand, or on light-colored ground, surface reflection fills in so much that synchro-sunlight is often unnecessary. The same applies if there is a white building or a large area of white clouds to reflect light back into the shadows of the main subject. Meter readings must be made from within a few inches of the subject on both the highlight and shadow areas, being certain that no reflections or shadows from the hand or other objects strike the area being read. By far the best way I know of to obtain such a reading is for the photographer to take a meter reading from both the highlight and shadow side of his own hand.

A meter variation of more than one stop between the highlight and shadow areas indicates the need for a flash fill-in. This is particularly true in shooting color —when bluecoated No. 5 B bulbs should be used.

When the sun is near the horizon, it is best to remove the flash from the camera and hold it two or more feet to one side to improve the modeling in the subject. If the sunlight strikes the subject from one side, it is best to hold the flash on the opposite side, being careful not to move it in too close in relation to the weaker and softer illumination of the sun. It is impossible to define precisely what "too close" may be because everything hinges upon the intensity of the sunlight. This is something each of us must learn to judge from experience.

On overcast days or perhaps at dusk, artificial sunlight effects are made by using two flashes in synchronization—one at the camera and one at approximate right angles. The position of the sidelight should strike the subject from the same angle as would the sun, and it should be about 20% nearer the subject than the flash at the camera in order to make the highlights intense. Inasmuch as this will make the sky register dark, due to the lack of sunlight, it is generally best to shoot down on the subject for a picture of this sort. A downward shot cuts out the dark sky and utilizes

(Continued on page 128)

SAVED
ing up
spot of



SAVED by synchro-sunlight. A storm was coming up across the canyon, but the effect of a spot of sunlight on Linda Darnell was obtained

by one flash on a long extension. Since drama was needed here no fill-in flash was used at the camera to cut into contrasty shadows.



Plastic Safety Shield For Midget Flash Reflectors

By Jack Wilson

MIDGET FLASH LAMPS are at their economical best for close-ups in both color and black and white photography. Modern flash lamps have excellent inside and outside protective coatings and rarely shatter if handled with reasonable care. To avoid the slightest risk of spraying the subject with glass particles some photographers use a shield on their flash reflectors. An efficient plastic shield for your midget flash lamp reflector can be

made in a single evening. This shield has a double value: clear plastic for safety, blue plastic for use in flash photography with daylight color film.

Plastic material is surprisingly easy to handle—even for a novice worker like myself. The only tools needed are those usually found in the kitchen tool drawer. A jig saw (the light hand-type with a thin jeweler's blade is best), a small twist drill (about $3/32''$ diameter will do), and a

pair of pliers make up the tool list. You'll need a scrap of sandpaper for smoothing the edge of the shields, though one of the wife's manicure emory boards will be a lot handier—if she'll let you swipe it. And you should have gloves of some kind to wear when forming the hot plastic.

If you make your set of shields from blue plastic, you can save the extra cost of blue flash lamps for daylight color photography. Most plastics dealers stock 1/16" sheets of transparent blue Lucite, which I have found to be just right for filtering the light of white flash lamps for fill-in use with daylight color film.

In selecting the plastics, a blue correction filter for color photography (such as the Harrison B-2) may be used as a color guide, or if that isn't readily availa-

ble, a scrap of the blue lacquer coating from a "B" flash lamp will do. If your plastics dealer doesn't have the right color of plastic in stock, don't get discouraged. You can probably dye clear plastic to the proper tint. The new cold-dip dye is especially easy to use. The plastic stock for the shields costs about thirty cents for the clear; about a nickel more for color.

If diffusing screens are desired, a set of the shields may be prepared by lightly sandpapering the inside surface. Perhaps a more practical all-around method of diffusing the light, or controlling its intensity, is to cover the flash reflector with a thickness of clean white handkerchief. The shields conveniently hold the handkerchief in place and one thickness of cloth cuts the effectiveness of the light about in half.

THE PATTERN for the midget flash lamp reflector protective shields may be drawn directly on the paper which covers the 1/16th" sheet plastic stock. With the focusing type of reflector shown, or any others where the flash lamp projects slightly beyond the reflector rim, the diameter of the shield blank should equal the outside diameter of the reflector plus about $\frac{1}{4}$ " to allow for the convex curvature which is necessary so that the shield will clear the end of the lamp (this is $5\frac{5}{8}$ " for the reflector illustrated). When a flat shield may be used, the diameter of the blank should be the same as the outside diameter of the reflector. Three $\frac{1}{4}$ " by $\frac{1}{2}$ " tabs are equally spaced around the circumference of the blank (120 degrees apart if a protractor is used to make this measurement). Mark the centers of two of the tabs for $\frac{9}{32}$ " diameter holes through which a rubber retaining band will be tied.



Illustrations by the author

THE SHIELD BLANK may be cut out with a hand jig saw. One of the thin 6" jewelers saw blades will cut through this thin plastic stock with amazing ease. Make all cuts just outside of the pattern outline, being careful not to cut into the tab portion, as the plastic breaks quite easily along score marks. If no saw is available, the outline may be scored with a scriber, or other sharp tool, and the excess plastic broken away.

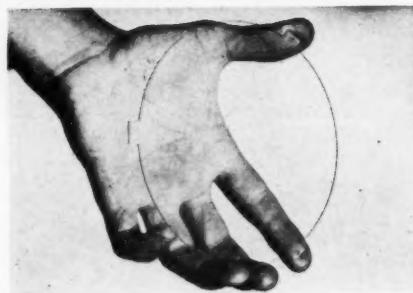




DRILL TWO TABS which are marked for the $\frac{3}{32}$ " diameter holes. Since the plastic is rather soft, either a hand drill, or pin vise will do to hold the twist drill.



SAND THE EDGES of the blank smooth using coarse, then fine sandpaper. Manicure emory boards will be found very handy for this job. Sand to the pattern outline with the rough side of the emory board, and finish with the fine grit surface. The protective paper may now be removed from the plastic blank.



THIS IS HOW the finished blank for the shield appears. For reflectors from which the flash lamp protrudes the next step is to form the blank into a shallow convex form. If a flat shield may be used, the next step is the bending of the tabs to fit the reflector rim.



THE PLASTIC BLANK may be softened for bending by heating it for a few minutes in an oven at a temperature between 250 and 300 degrees fahrenheit. If you do not have ready access to an oven, this thin plastic may be heated sufficiently for the simple bends required by dipping it in a pan of boiling water. Be sure to wear gloves while handling the hot plastic. The blank may be pressed over the back of a saucer to form the convex curvature. If it is not convenient to press the plastic into shape with the reflector as is shown here, any other similar round object will do. If you do not arrive at the correct shape the first time, the plastic may be re-heated and re-shaped repeatedly. The convexity should be kept at a minimum—just enough to allow bulb clearance—so that an objectionable "lens" effect will not result.

(Continued on page 130)



You can tell at a glance they're

Kodachrome Prints

THERE'S something about a Kodachrome Print . . . a crispness, a sunny brilliance, a technical excellence . . . that stems naturally from Kodak's years of work with color. As you know, Kodak introduced color into popular photography with Kodachrome Film and, subsequently, Kodachrome Prints. It would be strange if Kodachrome Prints weren't pretty wonderful, wouldn't it? Kodak research men have lived with color so long; Kodak technicians have made so many color prints.

The bigger the Kodachrome Print, the more beautiful, of course. Treat yourself to some of the "3X" size— $3 \times 4\frac{1}{8}$ inches—illustrated here. Price, only 85 cents each—six or more from the same original, 75 cents each. Kodachrome Prints, you know, can be made from either 35mm. or Bantam original color transparencies. Four standard sizes, at 60 cents to \$5.75 each (minimum charge per order, \$1).

It's Kodak for Color

Kodak

BULLETINS

NEWS OF KODAK PLANS AND PRODUCTS

FLASH, 1948

TWO big trends characterize postwar amateur photography. One, the greatly expanded and still expanding use of color. The other, a startling increase in flash photography, out of doors as well as indoors.

Amateur flash, before the war, had already achieved a brisk jog trot. Since the war, the trot has turned into a sprint. New Kodak cameras with built-in flash synchronizing mechanism . . . quantity production of handy flash devices, such as the Kodak Photo Flasher . . . increasing supplies of high-speed midget photoflash lamps . . . these, and many other factors, have contributed.

Probably the greatest impetus to amateur enthusiasm has been the steady improvement in flash technique, spearheaded by professional and press photographers. Superb published work, both color and black-and-white—produced by means of extension flash, multiple flash, and flash lamps used as supplementary sources to balance daylight outdoors—has pointed the way, out-

lining new fields of pictorial opportunity that are open only to users of this "portable sunshine."

Why Midget Lamps?

Emphasis today is on midget lamps because they are the lamps for amateur flash photography. Entirely aside from their convenience and economy, the small lamps offer technical advantages. Because they provide a compact, concentrated source of light, they permit a reflector design of great efficiency.

Consider, for example, the reflector used on the Kodak Flashholders and the Kodak Photo Flasher. Deep, compact, and convenient, this reflector is optically designed to utilize all the light of the small lamp to best advantage—concentrating it within the picture area instead of spilling it all over the landscape. A No. 5 lamp, in this reflector, yields full exposure of subjects *thirty feet away*, on Kodak Verichrome or Kodak Plus-X Film, at $f\ 4.5$ and 1100. While the larger No. 11 lamp puts out twice as many

lumens as the No. 5, it requires the same lens and shutter settings when used in such a compact reflector. So, the user of the larger lamp either must carry a more bulky and less convenient reflector—or must waste all the extra light and the extra cost.

New Flashholder Aids

Two new accessories have recently become available to Flasholder users. One is of interest to owners of Flash Kodak cameras—such as the newer Kodak Monitor and Vigilant Cameras, the newer Kodak 35 Cameras, the Kodak Reflex and Medalist II Cameras, and the Kodak Flash Bantam Camera, $f\ 4.5$. This is a 3-foot extension, which permits the photographer to hold the Flashholder at a distance from the camera, below, above, or to one side, for better subject modeling in close-range shots.

The other, called the Kodak Flashholder Adapter, is designed to adapt the Kodak Flashholder for use with flash shutters which have two-prong flash holder connectors. Many press-type cameras are equipped with flash shutters of this type.

For those who wish to use flash, but can employ neither a synchronizer nor a Kodak Flashholder, the inexpensive Kodak Photo Flasher provides a handy solution. This compact reflector unit accepts No. 5 and SM lamps, and extends the advantages of flash photography to any camera that can be set for "time" or "bulb."

f/1.4

THE first Kodak lens to bear the name "Kodak Cine Ektar"—a 25mm. lens with the enormous relative aperture of $f\ 1.4$ —is now in production.

This superb new lens is for 16mm. motion picture cameras. Here are some of its features:

Seven glass elements, combined into four components; all glass-air surfaces Lumenized; aperture range from $f\ 22$ to $f\ 1.4$ (twice as fast as an $f\ 2$ lens); unusually flat field; minimum distortion; excellent color correction; no appreciable shift in focus when stopped down to minimum aperture. Focusing range from

infinity down to 12 inches from the film plane. Widely spaced focusing scale marks and depth-of-field scale marks, with more markings than are normally provided. Lens stop markings uniformly spaced (no crowding in the small aperture scale). The front element of the lens is positioned deeply, so that the barrel itself serves as a lens hood. Barrel construction of duralumin (total weight of the lens is about half that of the 25mm. Cine-Kodak $f\ 1.9$ Lens).

Every dyed-in-the-wool 16mm. enthusiast will want an early look at this lens. For color, and for difficult light conditions, it is the movie maker's lens.

JUST ENOUGH—ALWAYS FRESH

Kodak Tri-Chem Pack Gives You Developer, Short Stop, and Fixer, All in One Small Inexpensive Package

FOUR airtight, heat-sealed metal-foil packets—full of factory-fresh, ready-measured chemicals to make developer solution, stop bath, and fixing bath—just enough for two average-size rolls of film or several dozen album-size prints—to be mixed in a jiffy, used, and then discarded . . .

That's the new Kodak Tri-Chem Pack—a 20-cent handful of helpfulness, simplicity, and convenience.



FIVE GREAT VIRTUES

CONVENIENCE, simplicity, economy, freedom from risk, and certainty of fresh solutions—these are the five great virtues of the Kodak Tri-Chem Pack.

Simplicity is absolute. The A and B packets of reliable Kodak Universal M-Q Developer yield eight ounces of working solution. The packet of Kodak Stop Bath with Indicator makes eight ounces; so does the packet of Kodak Universal Fixer. An ordinary eight-ounce water tumbler can be used for mixing; you don't even need a measuring graduate!

Economy is noteworthy. The pack is just right for an evening

of contact printing, or a couple of rolls of film that you want to see right after the day's snap-shooting—and it costs only about as much as a pack of cigarettes. And there's no leftover solution to be stored, to be discarded later because you're not quite sure of its strength.

Convenience is great, especially when you're in a hurry. All three working solutions can be made quickly and neatly. And when the job is done, you simply dump the Tri-Chem Pack solutions into the sink—and you're all through!

MIX IT FRESH—USE IT FRESH—DISCARD IT



Watch for this Kodak Tri-Chem Pack display.

At left, the Kodak Tri-Chem Pack and its four packets. At far left, the two components of Kodak Universal M-Q Developer; next, the Kodak Universal Stop Bath with Indicator; at right, the Kodak Universal Fixer. Each is sealed in metal, and labeled a different color for quick identification.

Stack a half dozen Kodak Tri-Chem Packs on the shelf alongside your processing trays. They won't go stale; the little metal-foil packets are airtight and secure. They'll be fresh and ready whenever you reach for them—and after you've used a few Kodak Tri-Chem Packs, you'll be reaching more and more.

See your Kodak dealer

KODAK products are sold through Kodak dealers, any of whom will be glad to complete the descriptions of Kodak products which are mentioned in these pages. Usually, too, they will give you opportunity for firsthand inspection of the advertised items.

And in matters of general photographic information your Kodak dealer will be found to be soundly informed.

Kodak



He's looking for trouble...

...as the lab men would say, "making an analysis to determine the deterioration rates of the various components of a new formula."

To put it more simply—he's uncovering clues that lead to improved developers . . . more efficient fixers . . . and those handy darkroom trouble shooters that supply the answer to special processing problems. He's helping you get better negatives, better prints . . .

with better-than-ever preparations from Kodak's famous Research Laboratories . . . Eastman Kodak Co., Rochester 4, N. Y.



Kodak for Chemicals

Mobile batch bins facilitate testing and packaging of Kodak Chemicals . . .

Kodak

At your Kodak dealer's:

Kodak Anti-Fog No. 1 . . . Add to developer when films or papers tend to show fog from age or unfavorable storage . . . or have been stored between exposure and processing.

Kodak Hi-Temp Hardener . . . Use before developing for maximum protection of films when necessary to process at higher than normal temperatures.

Kodak Anti-Calcium . . . Prevents or minimizes formation of hard-water precipitates in all developers except caustic type . . . keeps solutions clear . . . helps prevent scum on negatives, scale on darkroom equipment.

Kodak Photo-Flo . . . A wetting agent that reduces surface tension of water and permits it to run evenly off film and paper surfaces . . . prevents water marks or streaks during drying.

Kodak Anti-Foam . . . Counteracts tendency of photographic chemicals to foam and froth when agitated . . . minimizes air bells . . . prevents spots and stains on emulsions of film or paper.

Picture Section

JUNE

PITTSBURGH VISTA

O. E. ROMIG, A.P.S.A.





DOME DESIGN

PAUL K. PRATTE, F.R.P.S.



BOX CAMERA PORTRAIT

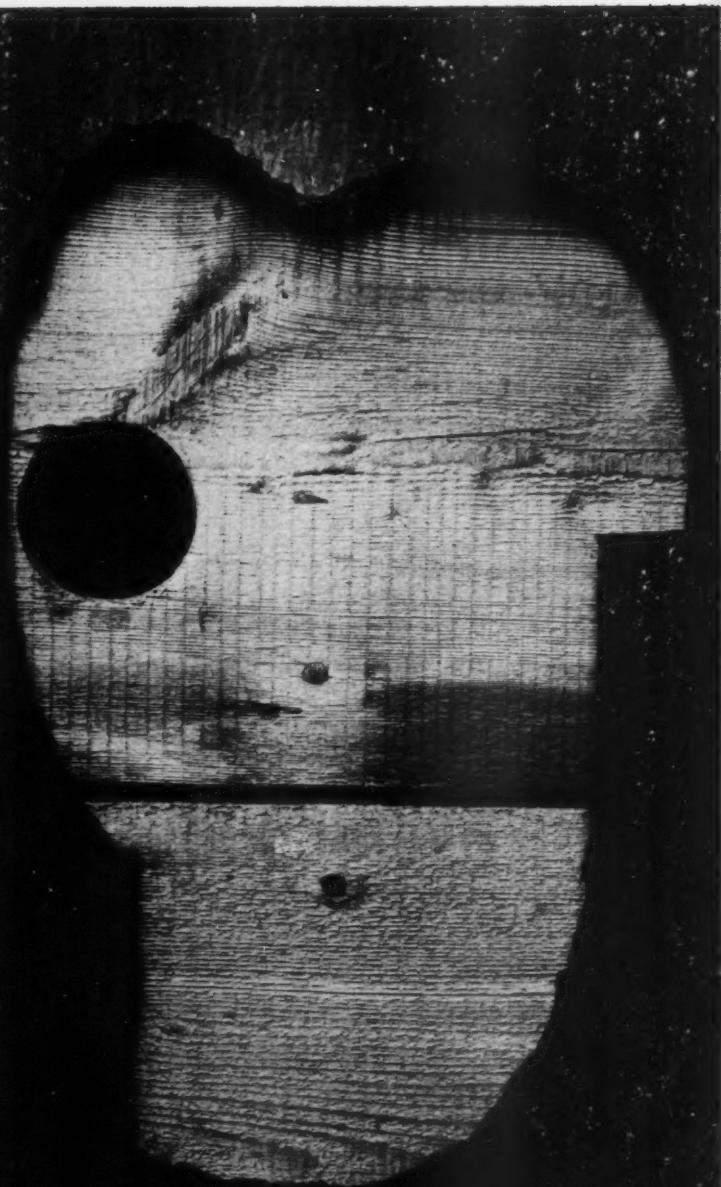
HAL ROBERTS, A.R.P.S.

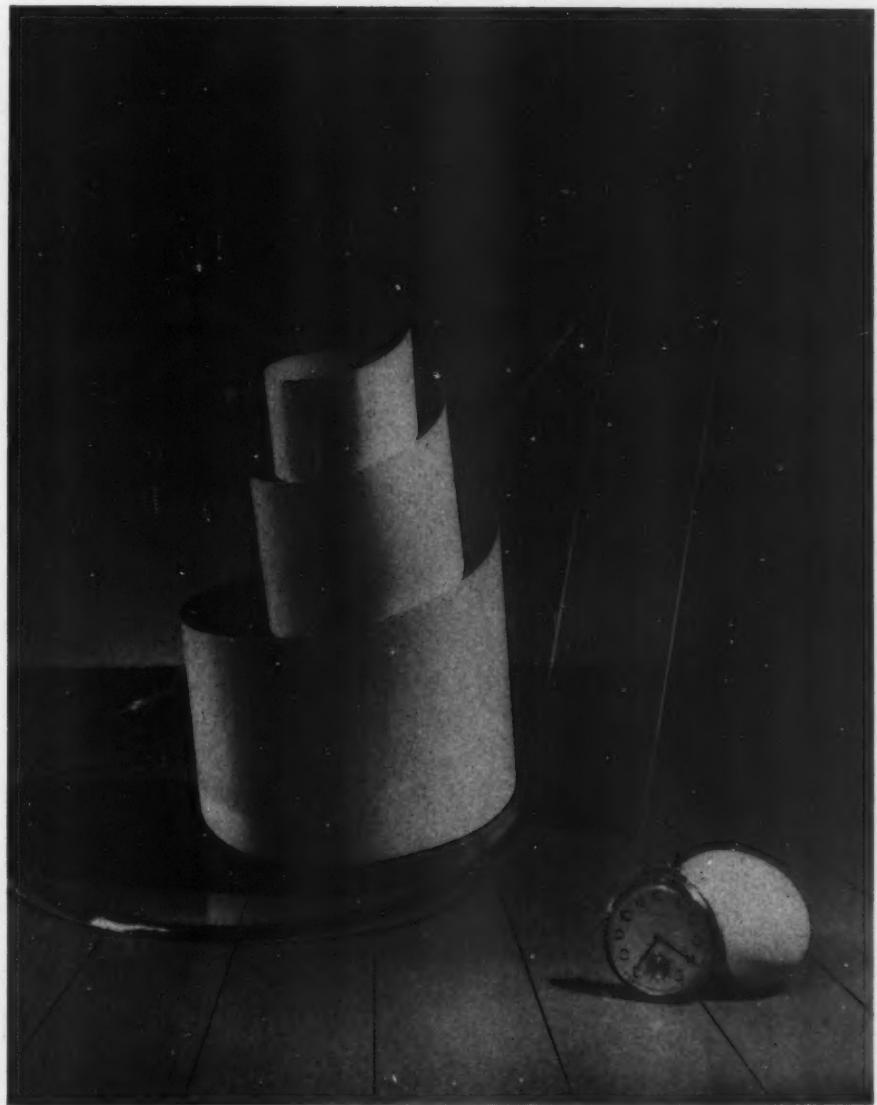
"WHAT SHALL I SAY?"

R. W. J. NORTON, A.R.P.S.



AARON SISKIND





FORMS AND RHYTHM

HARRY K. SHIGETA, F.P.S.A.



J. STRAIT

TOSH MATSUMOTO





MILTON B. LIPTON

BILL MERIWETHER







MARK WARREN



VICTORIAN STYLE BATHROOM. The type of picture most in demand at the moment is the gay nineties fashion-plate, illustrating what women's clothing designers are calling "The New Look," which Bettmann has had no trouble in proving to be as old as the hills.

"You may talk about split-second action all you please, but the most fascinating story within reach of anyone's lens today is the history of Hometown, U. S. A., and much of it will never be preserved if the cameras do not start clicking."—

OTTO BETTMANN The Backward Photographer

By JHAN AND JUNE ROBBINS

Illustrations from the Bettmann Archive

WHEN OTTO BETTMANN came to America in 1933 and began to tramp from one picture editor's office to the next, he received many an offer for his beautifully fitted Leica camera but none for the five suitcases full of photographs that he had chosen to rescue from Hitler Germany instead of his clothes.

"Not bad," was the usual evaluation, "but what do you specialize in?"

Sadly, the scholarly, placid-faced Bettmann realized that in America everybody had to be a specialist. In order to separate himself distinctly from the great mass of shutter-clickers, he needed a classification so that editors would think of him in connection with particular needs. One photographer friend told him proudly that he himself had specialized in shooting pictures of Russian wolfhounds and that every magazine in the country had his name filed under "dogs."

Bettmann knew what his specialty was, all right. The majority of his photographs were camera studies of ancient paintings, of murals on monastery walls, old prints



World-Telegram Photo by Al Aumuller
OTTO L. BETTMANN in his 57th Street study.

and woodcuts, calendar art, maps, and cracked, fragile documents. All were carefully preserved on film, but what to call them? Otto Bettmann's knowledge of the English language was slight. With some difficulty, he searched a dictionary, seeking exactly the right term. The next week he triumphantly distributed to editorial offices a stack of business cards that proclaimed him to be, Otto Bettmann—The Backward Photographer.

In fifteen years, from this somewhat confused beginning, the Bettmann Archive has grown to include more than a million historic prints which are contained in four large, high-ceiled rooms in an old-fashioned brownstone house on New York's East 57th Street. Bettmann himself, however, has consistently resisted classification. Although, today, every editor knows his telephone number, he is just as likely to be called on for a series on the art of kissing (his records trace the pastime back to Charlemagne in 814 A.D.) as for his distinguished file on Medieval methods of surgery and bandaging.

OLD CITY VIEWS offer a fascinating field of study for the modern photographer. They are a natural for "now and then" presentations. Few people would guess the location of this scene—

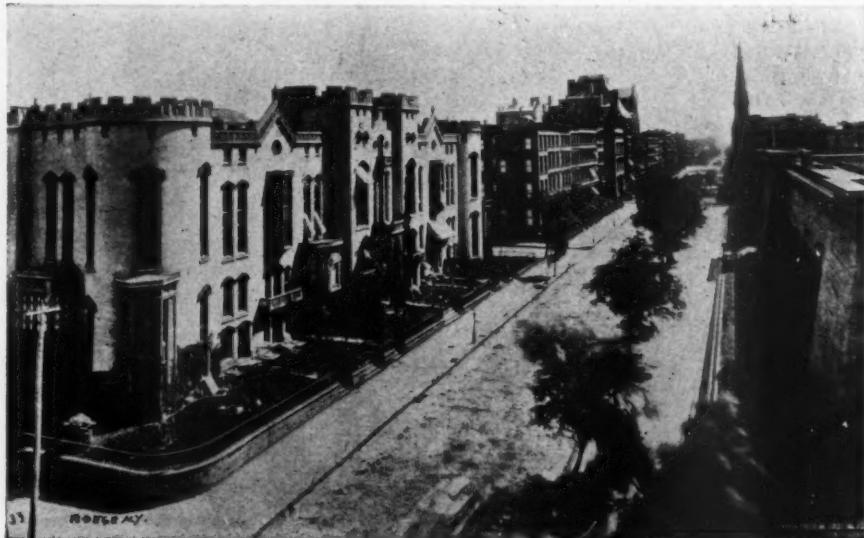
Significantly, in the photographic field, Bettmann's work represents a trend away from the random click-click of the candid camera which Bettmann thinks has been subjected to a great deal of over-emphasis.

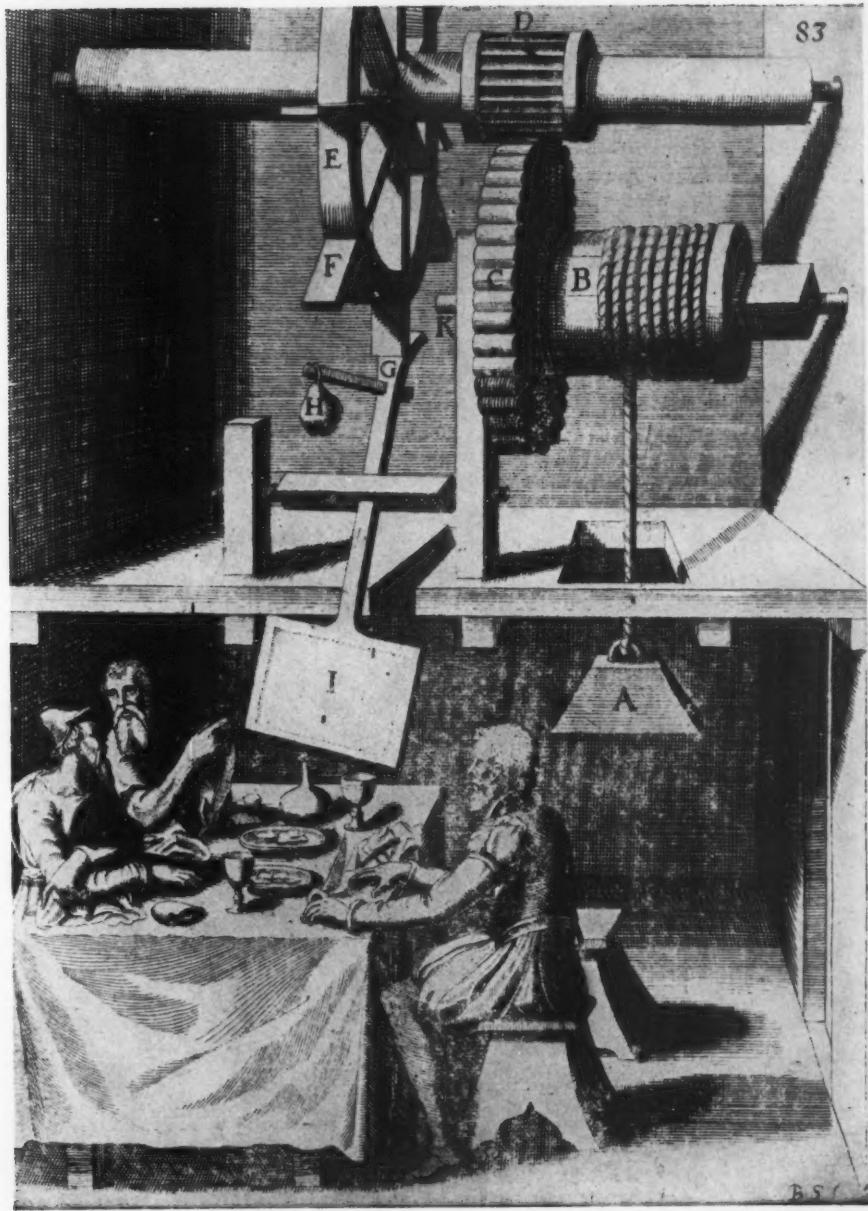
The word "photographer" he thinks, has come to mean a fellow whose idea of a good picture is to slip up on someone while he is choking to death on a graham cracker and take a snapshot of his tonsils.

The camera could earn a living for a great many more people, Dr. Bettmann believes, if it were less romanticized and the man behind it more willing to learn

PERENNIAL BEST-SELLER in Bettmann's file is this air-conditioning device of 1664, (*opposite*) designed by engineer George Boeckler—long before Rube Goldberg. This copper engraving has great interest for air-conditioning manufacturers, power engineers and rope specialists. We suppose the weight (A) drives ventilating fan (I) thus permitting the gentlemen to dine in comfort. It's a far cry from this complicated mechanism to our compact modern air-conditioning, yet the idea of increased home comfort is clearly expressed here.

called the world's busiest thoroughfare — the corner of Fifth Ave. and 42nd St., New York. The structure at the right is the old Reservoir, now the site of the New York Public Library





AIR-CONDITIONING—1664



QUINTS AND BALLYHOO—200 years ago! Five children were born to the wife of a Dutch peasant in 1719—and an unknown native artist recorded the event for posterity. We see here the surprised father's first glimpse of the new arrivals. (Four of the children died soon after, but were not interred for several weeks due to the universal interest that forced the parents to exhibit the quints at a profit.) Little did Otto Bettmann know that he had discovered a true picture scoop when the shutter of his Leica clicked. In 1933 when the Dionne Quintuplets were born, this print became a best-seller.

organization, selectivity, and the principles of editing and indexing. The archive is a sharp contrast to the sloppy "subject" index of most photo morgues, where pictures are often mis-filed and lost forever. Bettman can put his hands on any one of his million prints in 30 seconds. Some are filed under as many as 6 different categories, including date, artist or engraver, scene, type of activity, etc., and a thumbnail-sized copy of the print is affixed to each index card.

Bettmann has been accused of trying to compete with the Library of Congress and, indeed, the Archive itself has the atmosphere of a private museum. Hand-tinted prints from the collection hang on the wall. Hushed quiet prevails—customers

are inclined to tiptoe. Dim light from the aristocratic residential street outside is aided by lamps that shed a soft, yellow glow. Even the plain, straight-backed office chairs in which you may sit for hours, browsing through files, appear antique rather than businesslike.

Antiques, as a matter of fact, are in the family. His attractive, American-born wife, Anne Gray Bettmann, a well-known antique dealer, helps him with much of his research.

Education is Dr. Bettmann's forte. He looks the part of a scholar, with his slightly stooped figure, balding hairline, eyes twinkling above a bowtie, handkerchief flowing from the breast pocket of neat, sternly conservative suits. His voice is soft, rounded with a slight accent, and painfully precise in its choice of words. Now in his forties, he was once director of the rare book department of the Berlin State Art Library. He became an historian, perchance, because he was badgered daily by students demanding bibliographies on such obscure subjects as Eating Habits in the Era of Louis IV and Dental Surgery during the Early Greek Republic.

Digging into the book shelves, he dis-

covered that there was little that artists and engravers of the past had left to the imagination—they had made pictures of almost everything. Trouble was, the pictures were scattered, sometimes through two or three hundred volumes. More evidence was not even between covers but engraved on cemetary headstones, painted on the crumbling walls of mansion and monastery, or buried among the musty records of church and state.

The idea of pictorial history, had intrigued him long ago. As a child of ten, he had once presented his father, a well-known surgeon, with a volume titled "A Pictorial History of Medicine by Otto Bettmann Jr."—a text which later proved to have been abridged with paste pot and scissors from his father's 1000 volume medical library. Later, the idea occurred to him again. Carrying a bulky copy camera and a more mobile Leica, he toured 15 countries, snapped 12,000 photo records of priceless documents and paintings. Today, the Bettmann Archive contains, in many

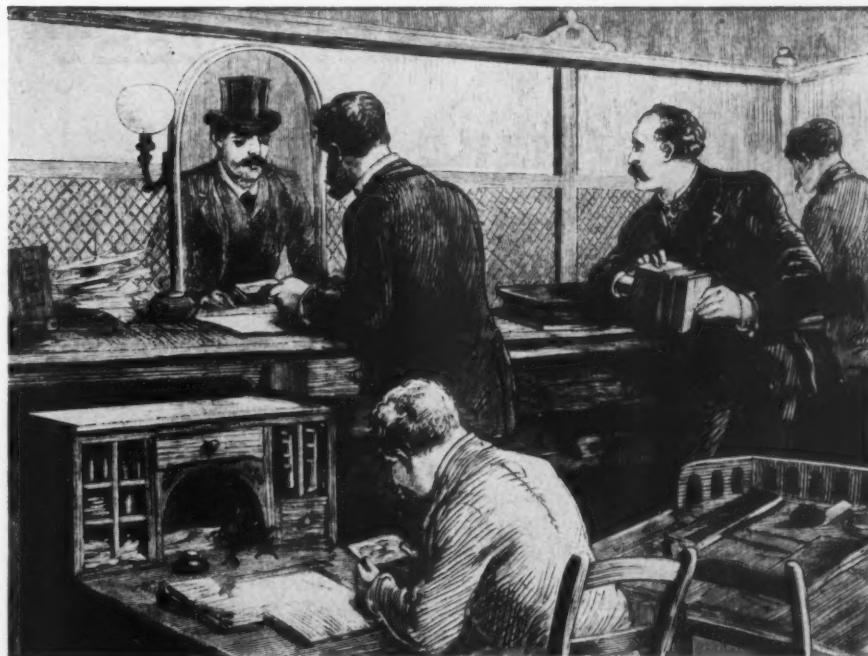
cases, the only existing historical records of European towns which have virtually been wiped from the map.

It is this task, although minus the forebodings that shadowed his work a decade ago, that Bettmann would assign to this country's amateur cameraman. You may talk about split-second action all you please, he declares, but the most fascinating story within reach of anyone's lens today is the history of Hometown, U.S.A., and much of it will never be preserved if the cameras don't start clicking.

Easiest job to tackle is the profile of the small country town or New England village where the population and the physical structure have remained more or less permanent through the years. The

(Continued on page 116)

ASSIGNED to do a photo-history of check forging, Bettmann turned up this print published in the *Police Gazette*. Caption reads: For "Queer" Characters: The Chemical Bank, New York, employs a special photographer to "spot" doubtful presenters of checks to bearer. 1885.





A CRITICAL LENS TEST

YOU CAN MAKE

by Eugene M. Hanson

Photos by Cecil Charles

DO YOU KNOW—not by hearsay, but of your own knowledge—at just exactly what apertures your camera lens has maximum sharpness of definition?

If you have several lenses and are particular about sharpness, can you tell which lens to keep and which to sell to others perhaps not so fussy?

If you are planning to buy a new lens, with or without a camera, would you like to be certain of getting one with extremely fine resolving power?

There is a quick and easy way for you to get all the answers to your questions

about the sharpness of lenses, and yet handle the whole thing right in your home, perhaps making yourself the local authority on lens quality. By this method you can calculate the resolving power, in lines per inch, of any lens.

Equipment Needed

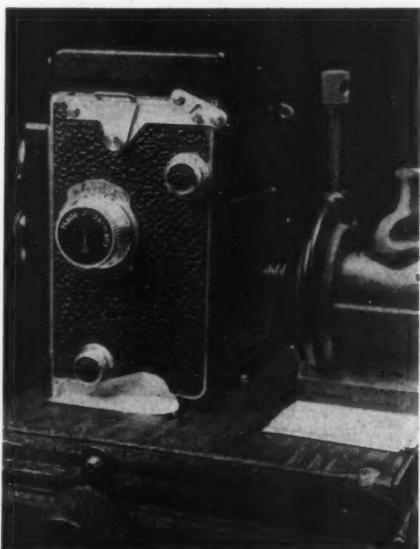
The equipment for a lens checkup will cost you about four dollars, and most of this cost will be for a small microscope. The tubular type, giving about 30-power magnification, is adequate. Such microscopes are sold as toys, and can usually

be found in novelty or toy stores. If you can't find one there, you can have one ordered by any hardware merchant, or you can order one from a mail-order house.

Besides the microscope, you will need a steel scale graduated in hundredths of an inch. This can be purchased from any hardware or tool store. You'll also need a bright light. A spotlight is best, but a photoflood, or a regular light bulb of high-wattage, will suffice.

A spirit level and a tape are other pieces of equipment which will make it easier to line up for the test, but with a little ingenuity you can get along without them. There's nothing complicated about the procedure with this equipment, but precision is called for. If you follow the instructions carefully, you'll find it easy to make the tests, but if you neglect any of the important details, the entire test will be a failure.

FOCAL POINT for the microscope, in lining up for the lens test, will be the spot which the middle of the film would occupy if it were in place and the back of the camera closed. You will be able to find this spot by working in a darkened room and noting where the beam of light from the lens converges into a point. This point is the focal plane of the lens.



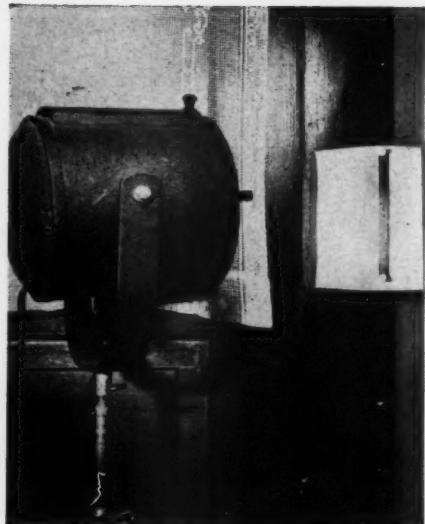
MEASUREMENT, rather than guesswork, will save you needless effort as it is the quickest and easiest method of lining up the steel scale and the lens to be tested. The middle of the scale and the center of the lens must be the same distance from the floor. By so placing it, you will be able to find the target with the microscope without too much difficulty

Making the Tests

Tests must be made either at night, or in a room which can be almost totally darkened in daytime. Preferably, the room should be large enough to permit setting up the microscope fifteen or twenty feet away from where the scale is mounted. If your largest room isn't long enough, set up the scale on a wall in one room and put the microscope in another room, sighting through an open door.

The problem in making the test is to focus the lens in question on the scale and to examine the image projected by this lens with the microscope. Since the scale is graduated in hundredths of an inch, you can accurately calibrate the resolving power of the lens.

The microscope and the lens should be mounted firmly on a table, desk, or other solid support, with the lens pointed at the steel scale fifteen or twenty feet away, and



BRILLIANT LIGHT at extremely close range will make the job of finding the scale with the microscope much easier. Weaker light can be utilized but focusing will be much harder. Keep light at an angle to reduce reflection.

with the microscope focused on the focal plane of the lens. No groundglass is necessary or advisable, since the microscope can be focused on the aerial image cast by the lens.

The image of the steel scale will be so small at this distance, however, that it will be hard for you even to find it, much less examine it critically, unless you follow a precision procedure. The method of mounting the scale, therefore, is important.

Mounting the Scale

The ideal way is to mount the scale on a sheet of white paper against a dark wall. Lacking a wall of this shade, you should provide some sort of dark-colored background for the paper—particularly if you plan to illuminate the scale with any light other than a spotlight.

If you use a spotlight for lighting, focus the beam to the smallest spot possible, and bring it close to the scale at an angle of 45 degrees. This angle will keep reflected light from bouncing toward the lens.

One other item regarding the mounting of the steel scale is important—and that is that it be placed at exactly the same distance from the floor as the middle of the lens which you are testing. Careful measurement of this distance will make later stages of the test much easier.

Why a Darkened Room?

The reason for working in a darkened room will be apparent as soon as you try to focus the microscope upon the image of the scale as cast by the test lens. In the dark, you will be able to see the cone of light which the lens casts and focus the microscope on the apex of this cone.

It will take a little juggling to find the exact part of this cone which picks up the scale, because it is a tiny area at this distance.

The Lens and Microscope

The best method of keeping the juxtaposition of the lens and the microscope under control is to rest the camera, or the lens mount, on the table and then clamp the microscope down at just the right height to pick up the middle of the cone, leaving the lens free and movable for focusing. A clamp is the best means of holding the microscope down, but liberal amounts of scotch tape can be made to serve the purpose, if absolutely necessary. Sheets of paper cut into small squares make a good base for the microscope, since they make it easy to raise or lower the point of focus by removing or adding sheets. (See title illustration for details.)

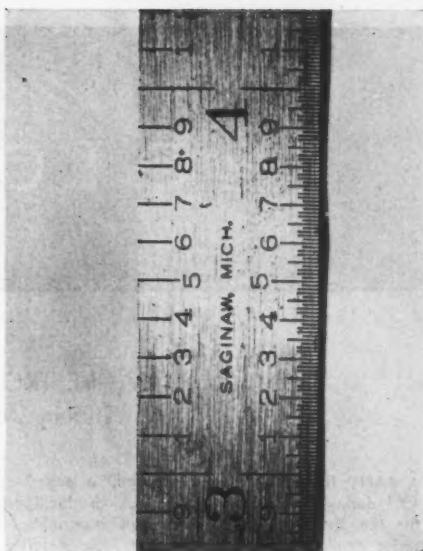
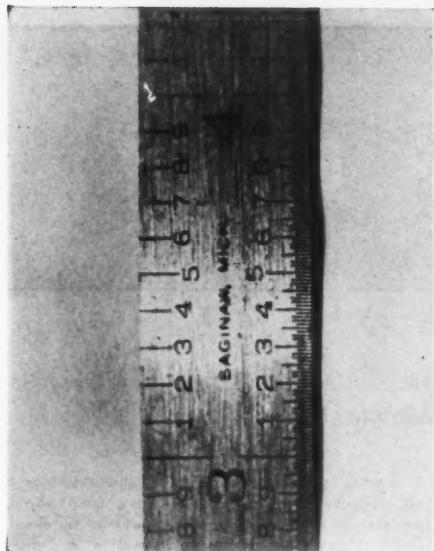
A spirit level is useful in making sure that both the test lens and the microscope are mounted on a direct line with the steel scale across the room.

Judging Lens Quality

Once you have set up your equipment as suggested here and found the image of the steel scale and focused on it, you'll be able to judge almost instantly the quality of the lens being tested.

Perhaps it would be more accurate and more practical to say you will be able to judge quickly the comparative qualities of two or more lenses being tested.

(Continued on page 121)



TEST IMAGES cast by lenses look like this when viewed through the microscope. Image on right, above, was cast by 5 $\frac{1}{4}$ -inch Zeiss Tessar. It is so sharp that the 1/100-inch graduations and surface texture of rule stand out clearly. Image on left was cast by a meniscus lens taken from a box camera. While fairly sharp in the middle, the image falls off rapidly toward the edges. Lenses of wide variation had to be selected to show proper contrast in reproduction.

PRACTICAL RESULTS compared. The pictures below were taken under identical conditions with the lenses described above. In order to make the lenses the only variable, the meniscus lens was mounted and used in the same Speed Graphic as the Zeiss Tessar. Thus, both lenses had the advantage of ground glass focusing and accurate exposure with the focal plane shutter of the camera. Loss of quality is more apparent when shooting subjects at greater distances.



Minicam

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NEGATIVE TROUBLESHOOTING During Development

MANY things can happen to spoil a negative during development, if one lacks the facilities for the strict development controls that laboratories employ. Fortunately, however, the majority of negative-spoiling errors can be remedied once the basic causes for them have been identified.

Pinholes in Negatives

Pinholes, one of the most common negative faults, appear as tiny, scattered, clear spots in the developed film. The foremost cause for pinholes is dust that has settled on the film and which prevents the developer from acting upon the emulsion. Meticulous attention to avoiding dust in the camera, film holders, and darkroom is the natural remedy. In loading roll film into a clean tank or in fastening film to clips or hangers, extra care must be taken to avoid stirring up dust that may be present on the walls or work bench.

Dust from dried hypo and other chemicals is another cause for pinholes. Dry hypo dust goes to work fixing out a negative as soon as it is placed in developer and the result is invariably an assortment of clear specks on the film.

Most developers utilize rather heavy concentrations of Sodium sulphite as a preservative and tiny undissolved particles sometimes float freely about in the developer. This also results in pinholes on the film. Straining through blotters or filter paper is the best remedy.

Scratches

When dust, grit, or careless handling causes film to become scratched, thin straight lines will appear upon development. If the scratches were made in the camera before the film was exposed, the scratch markings will usually appear light after development. If the scratches were made after the film was exposed to light, the scratches will appear dark.

Several inexpensive solutions designed to cover up negative scratches are available from photo dealers. A fairly good print can also be obtained from a scratched negative by making a "glass sandwich" in which the damaged negative rests in a shallow pool of glycerine and is pressed between two sheets of glass.

Streaks

A. Dark streaks which appear in the negative during development and fixation are generally wavy and uneven in appearance. They differ in appearance from static markings and streaks from camera light leaks (both of which are latent in the film before development begins) in that static markings are forked, irregular wavy lines. Camera light leaks, on the other hand, produce strong black lines that spread out from a corner or a side of a negative. Static markings are caused by an electrical charge in the film, usually traceable to its manufacturing, but also attributable to fast, rough winding of the film in the camera. Light leaks result from either faulty equipment or from careless handling of roll film or film holders in bright light.

B. Irregular areas of light and dark density in negatives can be caused by the addition of either warm developer, or concentrated developer, to a tank or tray during development. They can also be caused by insufficient developer in a tray.

C. Wave-like markings on tray developed negatives indicate insufficient rocking. Patches of light or dark areas, often with sharp edges, usually indicate uneven development resulting from an unequal flow of developer over negatives.

D. Parallel light or dark streaks—in which the light streaks show up in the dense areas of the negative, and the dark streaks appear in the light areas—are generally caused by insufficient agitation during development which, in turn,

(Continued on page 90)



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by
Mal Vaughan, Santa Barbara, Cal.,
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encourages local concentrations of exhausted developer.

E. Either light streaks or dark streaks which appear where film holders come into contact with negatives are caused by: 1. improper short-stop technique; 2. Contaminated film holders.

If film is taken directly from developer to fixing bath with no intermediate rinse or short-stop, an accumulation of developer from hangers, clips, or tank flanges can run down the sides of the film and produce local over-development after the film is in the fixing bath. This is particularly likely to happen when the fixing bath is below normal strength.

Chemical residue on clips, hangers, and in tank spirals can also produce streaks. A solution for cleaning tanks and trays can be made by dissolving a pinch of Potassium Permanganate in water and adding an ounce or so of glacial acetic acid. Let the solution stand in the tank or tray for an hour, then pour it off. Fill the container with hypo that has outlived its usefulness, let it stand for a few minutes, pour off, and rinse the container thoroughly in water.

Water Spots

Semi-transparent, droplike markings on negatives are usually water spots caused by improper drying of the film. After film has been thoroughly washed, it should be suspended by one corner to drain and dry in a diagonal position. If the wash water is clean, it is not absolutely essential to swab or wipe the film. In recent years, wetting agents have become extremely popular as a water-spot preventive and an aid to quick drying. Wetting agents are available from photo dealers under a host of trade names, and are very inexpensive. After film has been thoroughly washed it is placed in a final rinse to which a few drops of wetting agent has been added. After a few seconds in the wetting agent bath, water will flow off the

film in rivulets instead of collecting in drops when the negatives are hung up diagonally to dry.

Air Bells

When bubbles of air prevent the developer from acting upon the film emulsion, clear spots appear in the negative which will print as dark blots. In tray developing under a safelight, air bells can be seen and burst with a fingertip or soft brush. If tray developing is done in the darkness, running the fingertips or a brush over the surface of the film—together with rocking the tray—usually bursts the air bubbles. Tanks should be given several vigorous shakes immediately after the film has been submerged in developer to accomplish the same result.

Frilled Emulsion

The wrinkling or frilling of the emulsion along the edges of a negative indicates that the developing solution was too warm, or that there was too much difference in temperature between the various baths involved. Sometimes the frilling continues until whole portions of the emulsion floats off its support.

Reticulation

Reticulated film has a wrinkled or "sand-blasted" appearance. Excessive variations in temperatures between baths is the usual cause. This is particularly true when a very warm developing bath is followed by an icy fixing bath.

Reversal of Images

Either partial or complete reversal of a negative into a positive image is caused by a faulty safelight, or exposure of a negative to white light during development. Intentional exposure of a negative to white light during development is called "solarization." By George Reid.

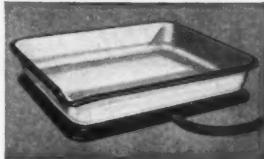
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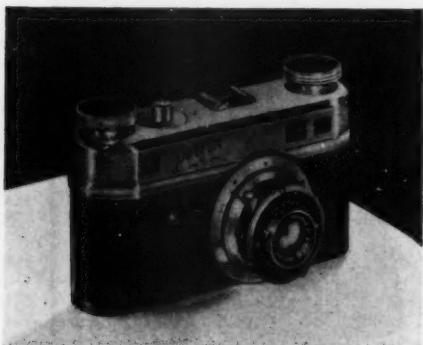
NEWS ABOUT NEW PRODUCTS

Kodak Neutral Test Card

The Kodak Neutral Test Card showing known reflectance characteristics, fills a need which existed for years with color photographers. A gray side of 18 per cent reflectance, and a white side of 90 per cent reflectance, 8 x 10 inches, four cards in an envelope, fills the bill. \$1.00 per envelope.

New Perfex Cameras

The 101 and the 102, two new Perfex cameras, are now in production both with Alphax



shutter. For \$39.99 the 101 stops at 1/150th

and has an f4.5 Wollensak coated lens; the 102 stops at 1/200th and has an f3.5 coated lens for \$10 more. Manufactured by Camera Corp., of America, 844 W. Adams St., Chicago 7, Ill.

Compco Slide Binder

The Compco Slide Binder provides one of the best means of protecting your treasured transparencies. It accommodates all standard slides, 2 x 2 to 3 1/4 x 4 1/4, has baked-on attractive hammer-gray finish, and sells for about \$4.75. Made by Compco Corp., 2251 W. St. Paul Ave., Chicago 47.

Kodak Extension Cord

A three-foot Extension Cord for the Kodak Flashholder, which permits the Flashholder to be held at a short distance from the camera when desired, is now available from Kodak dealers for \$2.04 including tax.

Water Demineralizer

A water demineralizer by Penfield Manufacturing Co., Inc., Meriden, Conn., is designed to convert ordinary tap water to the chemical equivalent of distilled water at a very low cost. It consists of a wall bracket, the renewable resin cartridge and an electrical resistance indicator to show when a new cartridge is needed. \$59.50 F.O.B. factory.

Flash Shutter on Vigilant Six-20 F:6.3

A Kodak Flash Dakon shutter is now being featured on the Kodak Vigilant Six-20 F:6.3 camera so that flash can be used at 1/25, 1/50, and 1/100 second shutter speeds with Class F Photoflash Lamps such as the SM. \$36.50

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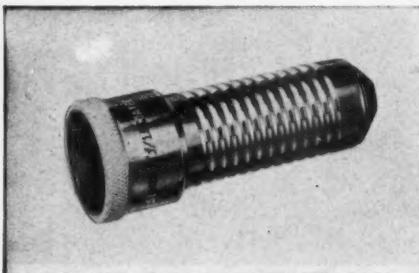
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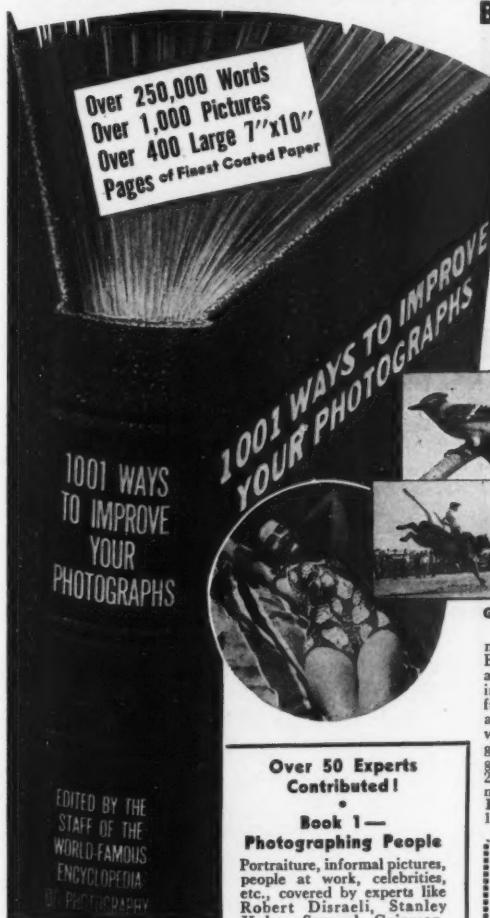
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As illustrated the cutting blades are designed so that a 1¼-inch stroke is all that is needed



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Add-A-Flash combination AC-battery portable speedlight by Electronic Specialties, Inc., 2643 E. Dauphin St., Philadelphia 25, gives a 1-5000th flash with more light than a No. 22 flashbulb. A flip of the switch changes operation from its self-contained non-spill wetcells to any 105-120 volt AC outlet. Up to 200 flashes can be had from a single charging of its batteries.

Accessories include battery charger, flashgun type handle, extra battery sets, sealed beam

and studio flashtubes with 20 foot cables, Booster-Flash for multiple light operation. \$180.00 plus tax.

GE Projection Lightmeter

The Model 8PH12 is the answer to your light measurement troubles. This new, portable (8 lbs.) projection lightmeter flashes light measurements on a screen for easy reading by large audiences. It is a great aid to lectures and commercial demonstrations showing lighting conditions. Additional information is available in Bulletin GE C 265, Apparatus News Bureau, General Electric Co., Schenectady 5, N. Y.



Da-Lite "Miniature Catalog"

A 16-page "Miniature Catalog" providing accurate screen tables, a standard aperture chart, and a unique formula for finding the correct screen size for any projector and any lens at any distance, is published by Da-Lite Screen Co., Inc., 2711 N. Pulaski Rd., Chicago 39.

Model 63LM Sound Projector

The Model 63LM is the 16mm sound projector, manufactured by Movie-Mite Corp.,

5 Second Quizz



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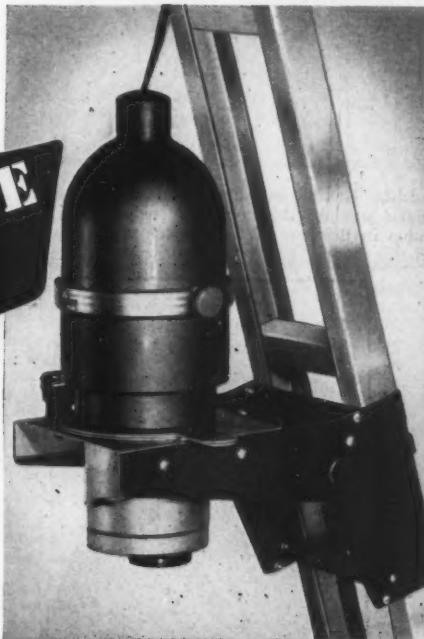
plus f. o. t., less lens

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Want an efficient enlarger . . . a basic instrument without fuss or frills, that will give you long lasting service and fine reproduction? Choose Compco!

You'll realize, once you've seen it, that here's a low cost enlarger that really has everything you want, plus some features you'd expect to find only in the most expensive instruments.

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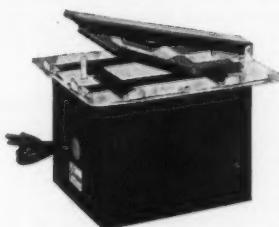
Compco ALL METAL CONTACT PRINTER only \$6.95 plus f.o.t.

It's fun making your own prints when you make

them with Compco's compact, economical printer.

• A Performance Tested Product

- Takes all size negatives . . . 35MM to 4 x 6 inch (10CM x 15 CM) including postcard size 3 1/4 x 5 1/2 (No. 122 film), also glass plates.
- 4 adjustable masking bands. Automatic light switch.
- Has yellow-green Indicator window. Shows when white-light is on (tells when to start counting).
- Has hinged plates with sponge rubber facing. Paper and negative held firmly in position when pressure applied.
- All parts plated or finished in smooth Hammertone Grey baked enamel. Nothing to rust! Easy to keep clean!



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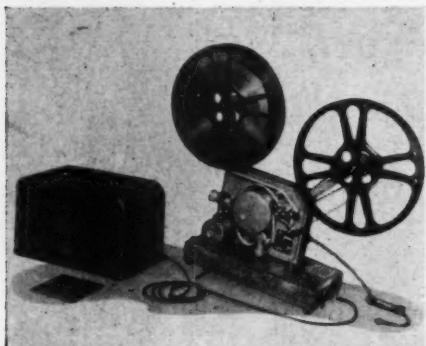
* With 3 1/2 inch f 7.7 Compar Anastigmat lens:
\$29.95 plus F.E.T.

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Manufacturers of Fine Photographic Equipment since 1912

2251 ST. PAUL AVE., CHICAGO 47

1105 E. 15th St., Kansas City 6, Mo. A new



push-pull amplifier using miniature tubes which make possible the complete enclosure of the tubes in the base of the projector, is a feature of this model. The new low price is \$225.

All Metal Double Film Holder

An all metal double film holder to fit all standard press cameras is being marketed by Burke & James, Inc., 321 S. Wabash Ave., Chicago 4.

A "U" shaped support is hinged inside the holder in such a way that when raised the film is just laid in position — when lowered it grips the edges of the film. Snubbers hold the wire so that the film cannot fall out when the holder is in the camera and the slide withdrawn.

Customflex Synchronizer for Ansco Automatic Reflex

The new Lumenar Reflector, three-cell Battery Case with new style Clamp, Universal Reflex Bracket on which the camera is mounted in a rubber cushion, the new type Safety Grip Cord, and a completely new precision Electromagnetic Coil are new features of the Customflex Synchronizer.

Designed by Heiland Research Corp., 130 E. 5th Ave., Denver 9, Col., especially for the Ansco Automatic Reflex, the new synchronizer retails for \$51.20, Federal Excise tax included;

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The NEW BACO B-3 Cut Film Holders are manufactured within tolerances set by A.O.S. standards. Experience, Workmanship and the Finest of materials go into each Baco Cut Film Holder. Outstanding features such as precision metal film guides that may be drilled or cut for identification marks. Extra long cover plate for ease of handling. An extra durable made lite trap makes it impossible to fog your film regardless of how you insert free running dark slides. (Infra-red proof) Beautiful durable Black Finish. Many other Features.

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The men and women who are now studying (and our many successful graduates) all have told us that they were agreeably surprised at the BIP method of teaching. You start right in on your very first day, taking pictures. The technical details are explained *as they arise* . . . not in dry, preliminary lectures. You learn while *doing*.

While all courses are geared to the individual rather than to "classes," in general, you may figure your time as follows: 60% will be given to actual photographic practice; 25% to progressive assignments; and 15% to classroom demonstration.

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Many of our students find that they can make outside money by taking a part time job and attending classes in off hours. The school also maintains an up-to-date list of nearby approved lodgings at moderate cost. The school plant itself is an immense building, located in a fine residential neighborhood.

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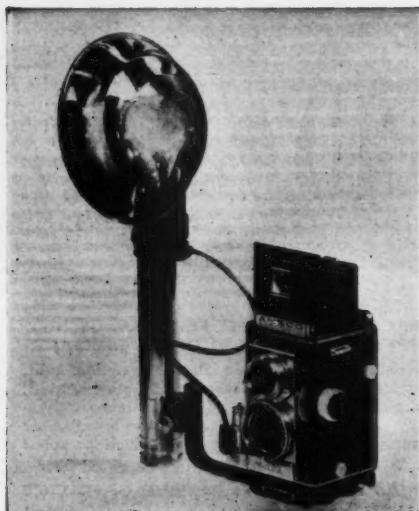
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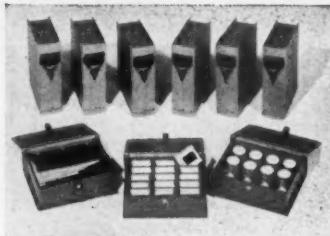
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The set includes Slide File with 15 compart-



ments each with a maximum capacity of 20 35mm. mounted slides; Filmstrip Files, one with room for 12 metal containers for roll film 1½" in diameter, the other with room enough for 16 metal containers; Negative Files for miniature rolls for 20, 18 or 36-exposure 35mm. rolls; and Files for flat negatives 3⅓ x 5", and one for 5 x 7".

18-Year-Old Projector

Hank Wilson, Ampro's service manager, whistled in surprise one day last month as he scanned his morning's work and recognized a B-1000, the very first Ampro precision projector ever built, 18 years ago. Except for periodic lamp replacements, the projector operated perfectly this entire time, and required only 3½

an additional \$22.50 for factory type installation.

Six New Amfiles

Locating that negative, roll or print will be a lot easier with any of the series of six new photographic Amfiles now being marketed by

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READY TO ENLARGE
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STORE-AWAY ENLARGER

It's a full-size $2\frac{1}{4} \times 3\frac{1}{4}$ enlarger, superbly engineered to deliver excitingly sharp, prize winning prints! Included in its amazing low price of \$39.50 is the tax — AND — Store-Away's needle-sharp F:6.3 anastigmat lens, with its handy, light-controlling iris diaphragm. There's rock-like sturdiness in its welded steel construction—and good looks in that 2-tone wrinkle finish. OF COURSE, IT'S MADE BY FEDERAL! . . . who first brought enlarging thrills into the American home—with unheard-of enlarger values! See FEDERAL'S latest achievement—the sensational No. 269 STORE-AWAY—at your dealer today.

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- ILLUMINATION: Parabolic reflector, diffusion type
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- MAGNIFICATION: 1 to 7 times at baseboard
- FILTER: Red swing-away type
- BASEBOARD: Welded, reinforced steel
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- MODEL 279: Same as 269, but with condenser lens illumination, \$47 (tax included), complete with lens.

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OFF THE SHELF . . . (Picture taken with FED-FLASH, the fan's handiest, sharpest value in low-cost cameras)



ON THE TABLE . . . (Another Fed-Flash shot superbly enlarged by the STORE-AWAY)



YOU'RE SET TO ENLARGE! . . . (FED-FLASH photo again, enlarged by STORE-AWAY. Note sharpness of detail, perfect contrast . . . a tribute to a perfect Bush camera — a super-line enlarger!)

**For the perfect picture
ANYWHERE . . . ANYTIME**



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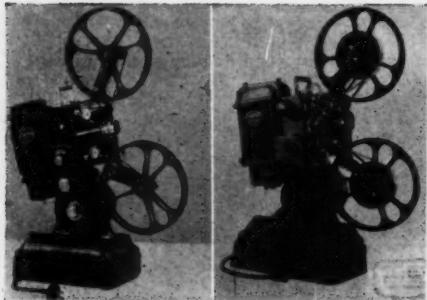


Here's the camera that took the sharp photos in this ad! A child can do as well—it's so simple to operate. Just sight, shoot—and FLASH—you've got it!

Only \$13.90
tax included



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Star D Slide Binders

Permanent protection for your $2\frac{1}{4} \times 2\frac{1}{4}$ transparencies is assured with the Star D Binder because it is made of tough metal. The slide, which comes assembled, is simply and easily slid apart; the transparency is placed between the two pieces of micro glass, and then slid together again. Made by Davidson Manufacturing Co., 5146 Alhambra Ave., Los Angeles 32.

Three New Movie Films

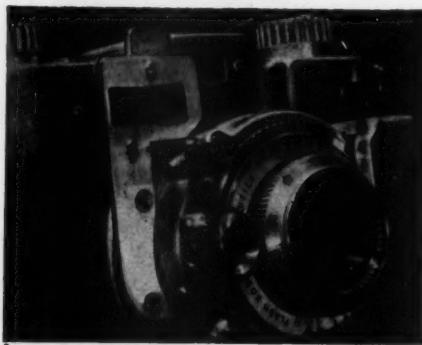
Known for their Charcoal Black and Charcoal Ember textured projection papers, Dassonville Co., Ltd., Newton, N. J., enters the movie film market with following: Orthochromatic, Weston 12, 25 ft. double 8mm., \$2.40; 100 ft. 16mm., \$5.60; Panchromatic, Weston 40, 25 ft. double 8mm., \$2.76; 100 ft. 16mm., \$6.63; Panchromatic, Weston 80, 25 ft. double 8mm., \$3.04; 100 ft. 16mm., \$6.63.

"Widor" Wide-Angle Lens Attachment

Doubling the angle of view of motion picture camera lenses without altering light transmission of image quality is featured in the "Widor" wide-angle lens attachment by Bell & Howell, 7100 McCormick Rd., Chicago 45. This lens answers the problems of taking group pictures at close range or including large indoor areas where distance is limited.

S.V.E. Color Slides

Six new color slide sets have been added to the S.V.E. series of VISUALIZED UNITS IN COLOR, which already has more than 100 sets in Arts, Science and Social Studies. These six are: The Virginia Colonial Legislature, A Visit to Morocco, Northwest Africa, Air Travel—Airport Activities, Air Travel—Passenger Service, Air Travel—Mail, Express, Freight and Baggage, and The Life of the Virgin.



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No user of a Kodak 35 R.F. can afford to be without one.

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RELAXO Fits Perfectly

Will not interfere with use of the Eveready Case.
(Complete simple instructions are furnished with each RELAXO sold)

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NIKOR tanks are thrifty *all ways!* On chemicals for example, only 8 oz. of solution is needed to develop a 5 ft. 35 mm. roll in the No. 35 tank. Similar solution economy in the larger tanks. But the big economy is due to their solid stainless steel construction. They can't chip or break . . . the lustrous

surface can't corrode or tarnish . . . therefore they last a lifetime. Their design, too, makes loading and daylight filling quick and easy; provides for free circulation and uniform agitation, resulting in even and perfect development. See NIKOR tanks at dealers today or write for literature.

Prices including all excise taxes as follows:

No. 1, for V. P. Roll Film.....	\$ 8.50
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No. 5, for 3 1/4" x 5 1/2" Roll Film.....	11.65
No. 6, for 3 1/4" x 4 1/4" (Kodak Film only). .	11.65
No. 33, for two 35 mm. 40-exp. rolls.....	11.85
No. 35, for one 35 mm. 40-exp. roll.....	7.50
Adjustable Cut Film and Film Pack Tank	16.50
Multiple Developing Tank, without reels	7.90

Extra Reels, regular models, any size	4.30
Stirring Rod & Print Paddle65
Extra Tall Can, with plain cover and lifting rod, 12", to take seven 35mm. or four No. 120 reels, without reels	11.50
Ditto, 17", to take eleven 35 mm. or six No. 120 reels	13.50
Ditto, 22", to take fourteen 35 mm. or eight No. 120 reels	15.00

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Give color magic to your favorite black-and-white photographs with Marshall's Photo-Oil Colors. It's as easy as A B C to get true-to-life results the very first time you try. Here's your chance to thrill to the beauty of COLOR PHOTOGRAPHS —WITHOUT COLOR COSTS.

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Each Marshall set contains a FREE instruction booklet giving complete information on the application of the colors and the exact colors to use for various purposes such as blonde or red hair, grass, tree trunks, brick walls, etc. . . . in fact, everything to give you the knack for perfect results in glorious life-like tones.

Write today for "How to Make Beautiful Colored Prints with Marshall's Photo-Oil Colors." It's a 32-page illustrated book, which gives you the complete basic course in photographic oil coloring—15c.

**SETS ARE PRICED FROM
\$5.85—\$1.25**

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Canadian Dist.: Canada Photo Products, Ltd.
137 Wellington St., West, Toronto 1

Morse M-80 Tray-Temp

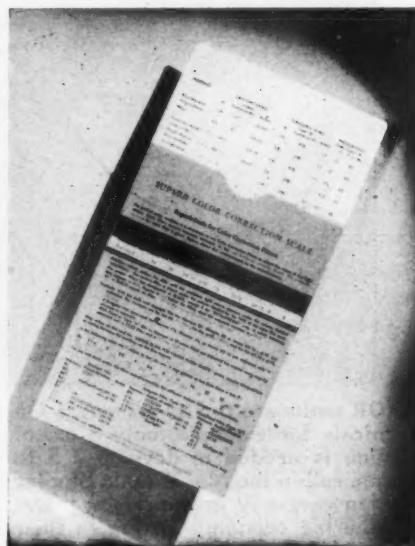
A revolutionary new, molded rubber reservoir base to provide constant control of temperatures in tray development is the Morse M-80 Tray-Temp by Morse Instrument Co., Hudson, O.



The unit, as illustrated, connects with water faucets and hot, cold, or tempered water and is regulated to the desired temperature. The flow of water maintains a constant degree.

Willo Superb Color Correction Scale

A big aid for taking better color photos, and for only \$1.50, is the Superb Color Correction Scale. One side gives the correct stop for any



film with any flash bulb at any commonly used distance and at any recommended shutter speeds for the bulbs used. The reverse side shows the increase in stops or fraction of stop required to correct exposure for every type film with each type light and color correction filter. It is made of plastic.

Remington-Rand Offers Two Papers

Remington-Rand, Inc., manufacturers of photographic equipment for office use for 12 years, is now offering two new enlarging papers, RRembrandt and RRemlite, to all darkroom users. RRembrandt is a chlorobromide projection paper and RRemlite is a translucent paper on natural white stock mostly intended for use as a paper negative material.

"120" Viewer

A high-grade meniscus lens is used in the new Guild "120" Viewer to give maximum magnification without distortion. Manufactured by Craftmen's Guild, 6916 Romaine St., Hollywood 38, Cal., the viewer is designed for color transparencies $2\frac{1}{4} \times 2\frac{1}{4}$ or $2\frac{1}{4} \times 3\frac{1}{4}$, mounted in standard slide sizes $3\frac{1}{4} \times 4$ or $2\frac{3}{4} \times 2\frac{3}{4}$. \$4.75. The viewer is non-warping plastic.

IN EVERY BIG CITY, there's one cameraman's camera store, where the bugs hang out, and where everybody stops in on his way to lunch to see if there's "anything new." In Cincinnati, happily, there are several such stores, and one of them is a little more than a slice in the wall called The Provident Camera Shop. The bugs go in and the bugs go out all day long. The owner, Nate Berkowitz, who is shaped like an egg with a perpetual smile, has been around fans so much he has taken on some of their habits. Mr. Berkowitz has invented a new camera gadget that takes shadowless flash pictures and you can buy it from him for \$1.95. The gadget is shaped like a box about four inches square. One end slips over the bulb socket of your flash attachment. (You don't use the reflector at all.) The top of the box is open. Three sides are opaque. The fourth side of the box has a cardboard screen over it. When the bulb goes off the light shoots through the open top of the box and through the cardboard screen. Result: a shadowless flash picture. It is for indoor use only because you need the ceiling reflection in addition to the light that goes through the cardboard screen to imprint your picture. The gadget weighs less than three ounces and can be folded flat when not in use. 720 Vine Street, Cincinnati, Ohio.

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"PHOTOGRAPHY IS FUN It's my choice of a career"

So says *Mary Bollinger* of York, Penna.

Mary Bollinger hasn't yet won national fame but she's on her way. A recent graduate of the Progressive School of Photography, she is now operating her own studio.

"Photography is a nice career for women . . . very interesting . . . meet lots of people . . . and it's a career that can be carried on after marriage without interfering with your home", says Mary. Of her photographic schooling she comments, "The Progressive School of Photog-

raphy through its fine equipment, helpful and skilled teachers, made it possible for me to gain in a short time such knowledge of practical photography that I was able to go right to work as a professional photographer on my own."

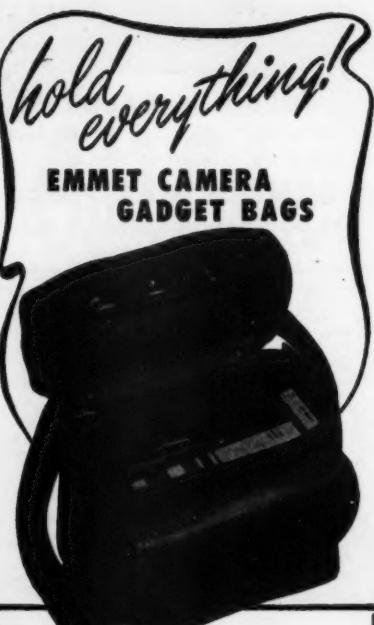
HOW ABOUT YOU? Do you want a career in Photography? Then study under experts in this finest of schools. Standard courses in Portrait and Commercial Photography; Direct Color and Camera Mechanics and Repair for advanced students and professionals. Coeducational. Dormitory for men. Living accommodations assured for women and married couples. G.I. Approved. But get all the facts.

Write for Free Catalog PT 7



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- ✓ Top grain, Elk tanned cowhide. Black or brown.
- ✓ Adjustable, heavy-duty shoulder strap, solidly anchored into bag reinforcement.
- ✓ Pocket in lid for filters, easy to reach.
- ✓ Inner bag compartments hold camera, motor, etc.
- ✓ Protective closing on outer pocket prevents breakage.
- ✓ Stiffening in lid and sides gives camera protection.
- ✓ Sturdy, easy sliding zipper closure.

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- Model 536. Graphic Gadget Bag, roomy, finest construction. \$34.80.
- Model 1191. Described above. \$27.95.
- Model 1192. For medium or small still or movie cameras and accessories. \$16.95.
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MOVIE NEWS AND RELEASES

A 1948 CATALOG listing 21 new home movies in 8 and 16mm, silent and sound, illustrated, and with complete description of each film, is now available from Sterling Films, Inc., 61 W. 56th St., New York 19. Films are classified as Musical Concerts, Sports, Adventure, Children's and Special Releases.

HOT OFF MADISON SQUARE GARDENS' hardwood floor comes "BASKETBALL THRILLS OF '48" with highlights in the National Invitation and N.C.A.A. tournaments released by Official Films, 25 W. 45th St., New York 19, and available in 8- and 16mm feature lengths only, and 16mm sound.

WOMAN OF THE TOWN, nine reels, is a new exciting 16mm. production straight from the pages of American history telling the story of William Barclay Masterson, known to posterity



as "Bat" Masterson, the fighten-est Marshall in United States history. Claire Trevor, Albert Dekker, and Barry Sullivan are the film's leading actors. Distributed by Commonwealth Pictures Corp., 729 7th Ave., New York 19.

DON'T LET anyone ever tell you that shooting stills of Hollywood movie stars is a lead-pipe cinch. Many of the stars are dyed-in-the-wool amateur photographers of the first degree. Take Dinah Shore, for instance. I won't soon forget the day I was assigned to do some fashion shots of that gal. Before I could unsnap my gadget bag, she blurted out in one breath: 'Now don't you think this will make the best background for shooting against the light with a coated lens and using a flash fill-in, diaphragm stopped down to F:11 at 200th on Double X, with maybe an extension over there on the side?'

And by gosh, she was right!

Then there's Rudy Vallee, whom I was to catch in fast action on the tennis court. I had scarcely pulled up in my station wagon when Rudy ambled over, saying, "Hope you're using a telephoto lens today. If you stand up there

shooting three-quarters into the sun, you can catch a pip at a six-hundred-and-sixtieth on the focal-plane stopped down between F:5.6 and F:8 on Pancho B . . . and if you don't have a telephoto I can loan you one that will fit right on your lensboard."

How was I to know this guy had more cameras than Carter has pills?

So it was with Gregory Peck. On arriving to do a home layout of the Peck family, Greg greeted me at the door with: "Just in case you forgot your Rollei, I have one here—with built-in sync, flash extensions, proxars, distars, and any kind of film you need. You can develop the stuff here in my darkroom if you want an immediate check on your negatives. Have DK20, DK60A, Microdol, or buffered borax."

The lingo these guys use!

One day I was all set to do some stills of Lou Costello with his family in the den of their home. Lou entered the room and his eyes brightened—"Ha, I see you're using a Graphic, but why not the new Ektar instead of a Tessar. Made of a new kind of glass. Gives a much sharper negative. Boy, you should see the prints I get from my ngs and they all go on grade 2 paper. What's more, I use a magazine back on mine, instead of those holders. Lots easier to carry around, and the sync'd range-finder with the light-beam night focuser is faster than using the ground glass."

How right, how right! But I always thought comedy was his racket.

So it goes with Rosalind Russell, Clark Gable, Cary Grant, Errol Flynn, Bob Burns, Kay

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Kysar, Tyrone Power, Edgar Bergen, Dick Powell, Claudette Colbert, and — oh nuts, a cameraman can get darned self-conscious in this burg.

A CLUB WHOSE MEMBERS buy one film and can use nine others is a unique idea promoted by Round Robin Films, 369 Lexington Ave., New York 17. Here's how it works. A person becomes a Round Robin member by purchasing one film after which he is assigned to a roster comprised of nine other members. Each member sends his film to the member whose name succeeds his on the roster, receiving, in return, a film from the member whose name precedes his. This change is made twice a month for five months, after which the purchaser receives and keeps the film he bought originally. A six months' guarantee covers the repair or replacement of damaged or lost films. There are no dues, fees, or rentals. Only expenses are the small postage charges.

Other Notable Releases

*Encyclopedia Britannica Films, Inc., Wilmette, Ill., announces release of 17 new Home Series productions in 8- and 16mm including AESOP'S HARE AND TORTOISE, A LOST WORLD, PETER RABBIT'S ADVENTURE, three films of baseball, films inside Russia before the Iron Curtain fell, and other educational releases.

*United World Films, Inc., 445 Park Ave., New York 22, has a new free illustrated catalog of Motion Pictures for Churches, describing more than 125 outstanding religious subjects now available to churches and schools.

*World in Color Productions, Elmira, N. Y., has added a second edition of the unusual "golden cities of stone" to be spliced onto their feature film, Bryce Canyon, thereby giving a double length showing of this

beautiful National Park. Reels 1 and 2 are each 50 feet in length in 8mm and 100 feet each in 16mm silent, available in black and white or color.

*PATTERN FOR PEACE—CHARTER OF THE UNITED NATIONS is a film drawn up in the spring of 1945 at the San Francisco Conference. It is two reels, 15 minutes, 16mm, distributed by British Information Services, an agency of the British Government with offices at 30 Rockefeller Plaza, New York; 360 N. Michigan Ave., Chicago 1; 907 15th St., N.W., Washington 5, D.C.; and 391 Sutter St., San Francisco 8.

*On the lighter side Library Films, Inc., 25 W. 45th St., New York 19, is releasing 11 new Laurel and Hardy comedies, raising to 39 the total film releases of this team.

*MAGNIFICENT DOLL, 11 reels of 16mm sound, relates the fascinating story of Dolly Madison, the charming and high-spirited wife of our fourth president. Ginger Rogers, David Niven, and Burgess Meredith are starred.

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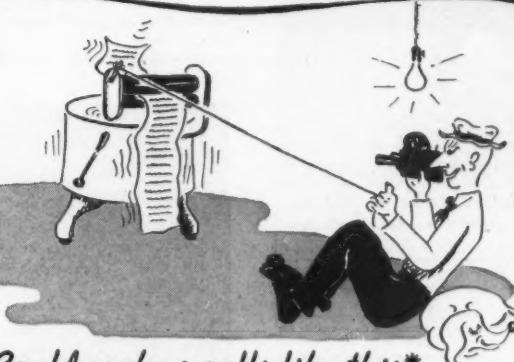
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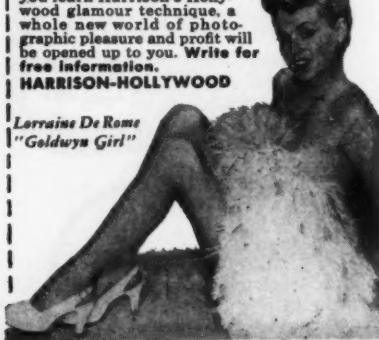
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GADGETS, KINKS AND SHORT CUTS

NOTES ON BUILDING AN ENLARGER, the new Kodak pamphlet which provides down-to-earth practical information for constructing your own homemade enlarger, is now available free from the Sales Service Division, Eastman Kodak Co., Rochester 4, N. Y. The leaflet discusses basic enlarger ele-

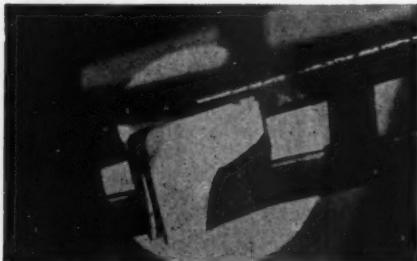
Improving Balance Scales

Here are some suggestions to improve the operation of your darkroom balance scales—the kind that have two pans; one for the chemical and the other for the weights.

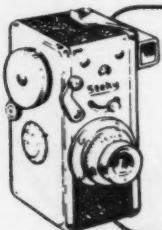
To keep the pans clean, coat them with a clear lacquer. Renew as required.

Paper baking cups, which cost about 12c per hundred, make ideal tray papers as the chemicals will not spill out of them.

So that two cups will not be required when weighing, make a counterweight as follows: Cut a strip of tin from a can approximately $\frac{1}{2}$ -inch wide and 2 inches long. Bend it in the shape of a hook as shown in the illustration and hang it on the weight pan side of the balance beam.



Now place a baking cup on the weighing pan and slide the tin counterweight along the beam until it balances the paper cup. Check several times by removing the weight and replacing it. The beam should return to balance each time that the counterweight is replaced. If the tin strip is too heavy, small sections can be clipped off until the correct weight is obtained.



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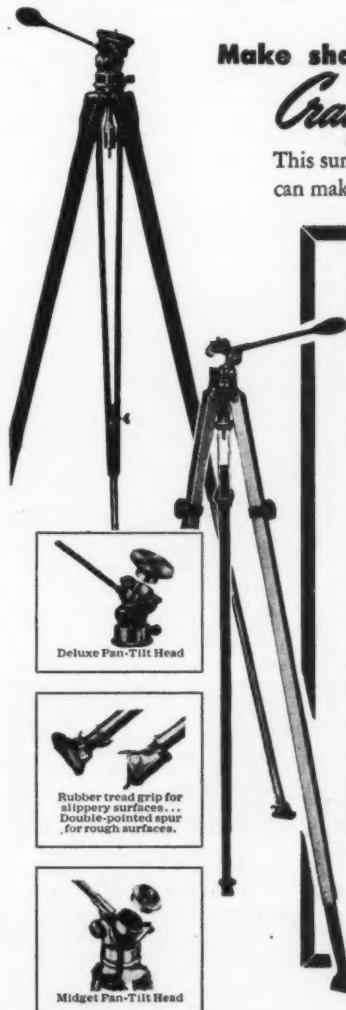
Duplicate weights can be made from either lead, copper, or brass stock. Take the weight that you wish to duplicate and lay it on the new material and mark off the size slightly larger than the old weight and cut out. Then place the old weight on one pan of the scale and the new on the other. File off material as necessary from the new weight until it balances the old. To check, reverse the weights on the pans. If they re-balance, mark the new weight with the amount it represents and continue on to the next replacement. By using old and new weights together it is possible to greatly extend the capacity of the balance.

—Louis Arbuckle.

Processing Motor

If an old-time hand-wound phonograph is available, or can be purchased at a second hand store, the amateur movie maker who processes his own films can have an efficient and inexpensive motor to turn his processing reel.

The one illustrated is a real old timer from which the turntable could not be removed. A 5-inch pulley made from two circles of $\frac{1}{4}$ -inch plywood was centered over the spindle and bolted to the metal turntable by drilling and tapping a hole in the table. A second pulley was made the same size as the first and used on the shaft of the processing drum. The pulley



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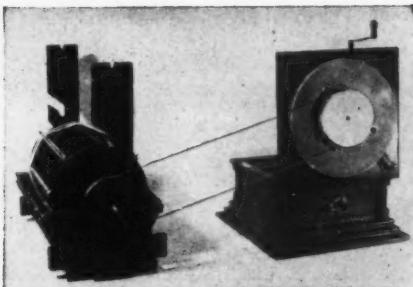
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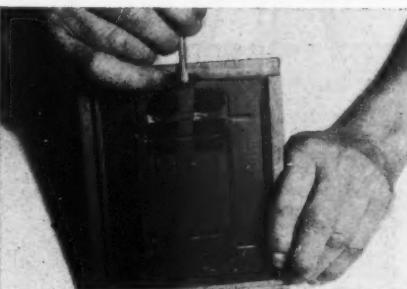
belt is simply a length of chalk line or heavy cord.

The speed of the motor is just right for film processing, turning the drum about 25 rpm. The spring-powered motor will run for about fifteen minutes without winding. It is best to wind it a few turns every few minutes, however, as this keeps a more even tension on the motor.

—George Carlson.

Simple Sheath, Plate, or Film Removing Aid

A discarded roll film spool is a handy tool for aiding in the removal of sheaths, plates, or film from holders as can be seen by the illustration.



With some holders, such as those with a spring sill, it is almost impossible to remove these items without breaking fingernails. This kink prevents this from happening.—H. Klein.

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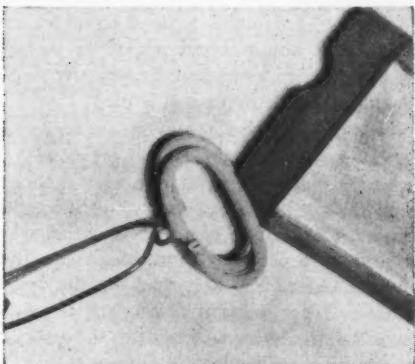
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Clamp for Light Gluing

Wooden holders sometimes loosen from constant use, usually near the light trap, and if not repaired immediately will fog the edge of the film in use.

A dab of adhesive, plus the pressure from the clamp of your photoflood reflector to hold the joint while drying, will insure a good glue job.

—H. Klein.



Bomber Motors Useful

Dozens of tiny 6 to 24 volt electric motors were used on war planes, and are now being sold as surplus at small cost. These have unlimited uses in the darkroom. By connecting them in series with a 60-watt lamp, they can be operated from 110-volt current. They can be mounted for chemical mixers by attaching a plastic rod to the drive shaft. By attaching a sweep hand, similar to that of a clock, with a white tip, the motion of the sweep hand can be photographed and the arc of motion allowed is an excellent check on shutter speeds. Most of these small motors work at 6000 to 7000 rpm. With suitable reduction gears, they will work as film agitators, small blower motors, for darkroom ventilation or negative drying, and for similar purposes. Be sure to get a Universal or A. C. type if your current is A. C., however.—Ross Madden.

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Otto Bettmann

(Continued from page 83)

photographer who finds himself native to a huge metropolis is advised to attack his particular home neighborhood as though it were an independent community. This is the way that Bettmann works:

Invariably, he arrives in town cold, without having done any previous research. Unless it is a matter of general knowledge, he will probably not have the slightest idea how old the village is, who founded it or what kind of people live there. Later, he may read in the local library, from original documents if possible, but first he goes straight to the antique shops. There, a birdseye glance tells him about the taste, the economic circumstances and the cultural background of the populace. There also, by browsing (often to the extreme irritation of the shopkeeper) he will come across old newspapers, illustrated catalogues, and even long-lost certificates of birth, marriage and death, all of which go under his lens to come out as crystal-clear 5x7 glossy prints. His Leica (50mm lens) somehow misses the depths and roundness of the old camera portraits. The Leica is quite satisfactory, however, for engravings, lithographs and woodcuts, although care must be taken to pick up all the fine lines of an engraving.

After the antique shop comes the postmaster. He always knows everything about everybody and sometimes sends Bettmann on to valuable sources of color and information. Local ministers and physicians, too, are helpful, once he has convinced them of his serious, historic purpose.

In his time, Dr. Bettmann has uncovered some startling family skeletons but, being a prudent and considerate person, he has hastily buried them again.

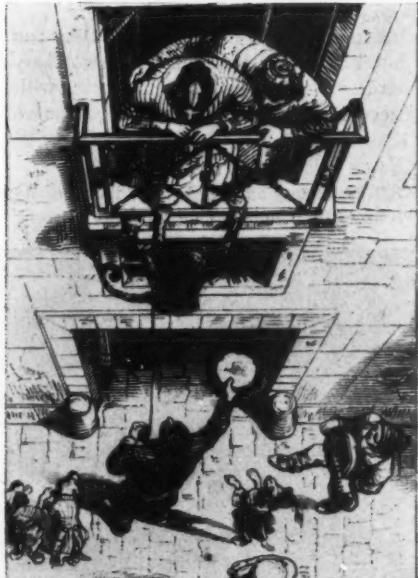
Although his interest in the folkways of his adopted country is evidenced in his current book *As We Were*, which abounds with candy-pulling, horse-shoe pitching, cider-making and other aspects of the old

oaken bucket era, the backward photographer's collection still bulks largest in his first enthusiasm, medical history.

One of his odd prints made news in 1934 when the Dionne quintuplets were born. Was this the first recorded instance of five births? Yes, said many prominent physicians. No, said Otto Bettmann and triumphantly produced a picture of a Dutch painting dated 1719, showing a mother and attendants and five new-born infants. Then, to cap it, he brought out another picture detailing the gravestone inscription of a German Countess named Margaret of Henneberg who died under a curse in 1611 after giving birth, the marker reported in true Barnum style, to no less than 365 children. This weird record is part of Bettmann's huge file on medical superstitions.

Emphasis in the collection is on the sparkling, the unusual and the intensely

PHOTOGRAPHIC perspective isn't anything new, as this print from the Bettmann Archive reveals. Parisian courtyard with street singers. Circa 1840. By J. J. Grandville (1803-47).



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human aspects of history. The backward photographer has noted the hopes and aspirations of the past (sketches for inventions, early attempts at flight, etc.) as well as its accomplishments. The first lump sum that Bettmann earned in this country hinged on a publisher's conviction that the backward photographer could make a dull, heavy world history fun to look at.

"How much do you want," the publisher asked him, "to illustrate this book?"

Bettmann took a deep breath, added several hundred to what he thought he could get. "Eight hundred dollars," he mumbled, polishing his glasses and his bald spot at the same time.

"Let's make it an even thousand," came the reply. "Just so you'll feel better."

The Bettmann Archive may have to look to posterity for fame but it has already made a tidy sum for its owner in the present. Advertising firms were quick to see the display value of the quaint old prints which have been selected with such an eye to modern pictorial standards. One company that manufactures a pain-killer in tablet form, for instance, ran an old woodcut of a strapped-down patient struggling in a dentist's chair and contrasted it with a bland-faced modern gulping down a pill fizzling in a glass of water.

A designer of luxurious bathtubs compared his silver and black Hollywood-style fixtures with a gay nineties invention which stressed modesty, providing the bather with

OLD PRINT in giant size became theme of store anniversary. Gimbel's, New York, 1947.



a shoe-shaped tub that covered him up to the chin. A high-priced women's wear store in New York blew up a set of his ancient fashion plates, made them the background of a prize-winning window display. Schools, museums, libraries, authors, movie studios and government offices are also among his customers.

Bettmann's all-time best seller is a picture captioned, "Air Conditioning, 1664" a sketch by a fifteenth century Rube Goldberg, showing a Medieval family sitting around a dining table being cooled by a ventilating fan. It has been used in the advertisements of air conditioning companies, manufacturers of table wear, power transmissions, and in exhibits of weird inventions. The picture has everything, he thinks—human interest, novelty, artistic composition.

The type of picture most in demand at the moment is the gay nineties fashion-plate, illustrating what women's clothing designers are calling "the new look," which Bettmann has had no trouble in proving to be as old as the hills. One prominent couturier gives frank credit to the Bettmann collection for his season's creations and not a few, in the past, have adapted his illustrations without bothering to credit. They have also inspired wallpaper designers, industrial engineers, toy manufacturers and costume makers. Bettmann thoroughly enjoys seeing his collection influence the contemporary scene.

Biggest "clinker" in the collection is his file of photographs of famous paintings. For a long while, nobody wanted them. Advertising and commercial clients were primarily interested in eye-stoppers, not art. But the effort was far from wasted. Today, many of the originals no longer exist and art museums, university libraries and private collectors are bidding for the Bettmann copies.

For the use of each print, Bettmann charges \$5 to \$100, but will cheerily send any number to a prospective client on approval. The publication of prints brings forth a flood of correspondence with scholars, some of whom try to pick holes in Bettmann's research. But they have never



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caught him yet. His pictures are checked and re-checked for authenticity, his collection no mere file but an authoritative museum. Periodically, he edits and weeds, consigning many to the wastebasket, more to microfilm. Hardly a day passes that does not see the addition of a dozen or so new items. Some, of course, are received in the mail from antiquarians who want to sell or donate to the collection. But Bettmann has a professional photographer who travels throughout the United States, and two free-lance photographers traveling Western Europe just as Bettmann himself did 13 years ago.

He does not feel, however, that his camera must always cling to its sober purpose. He likes to fiddle with composites and thinks that young cameramen who enter his field might get a kick out of superimposing incongruous modernities onto ancient scenes. A student who once came to him for advice had a wonderful time with his family photo album. This was a plush-bound volume that covered four generations of his rather illustrious forebears, and featured a full-page picture of great-grandpa, the straight-laced and humorless founder of the family fortune. By the time the Bettmann inspired student got through with him, however, great-grandpa had an Atlantic City bathing beauty perched upon his unyielding knee!



LENS TEST

(Continued from page 86)

Actually, it will be possible for you to calculate the exact physical resolving power of a lens, but for all practical purposes this is of little interest to the average photographer, since the physical resolving power cannot be translated into equal photographic resolving power.*

The variance in the resolving power of lenses, however (even those of the same type and focal length), is wide enough to make a noticeable difference in the sharpness of enlargements and these differences you can ferret out quickly with this microscope test.

Also, you'll be surprised at the differences in resolving power at different apertures. Almost all lenses are sharpest in the middle apertures, with the diaphragm stopped down halfway between wide open and the smallest stop. From the point of maximum sharpness, they fall off in resolving power much faster as the lens is stopped down than when it is opened wider.

For purposes of comparison, it is best to check the lenses first at their widest apertures. Best quality lenses hold their sharpness wide open as well as at medium apertures, while others not as well corrected will fall off noticeably as the diaphragm is opened.

With the best of lenses, even of short focal length, you will be able to see each of the hundredth-inch markings of the scale distinctly at twenty feet and with the lens wide open. For all practical purposes, such extreme quality is not necessary, and your best method in checking a doubtful lens will be to compare it with

* **Resolving Power**—For photographic work the term resolving power has come to mean the separation that must exist between the images of two equal lines before the two images can be distinguished on film. It is the ability of either a lens or a film to separate closely spaced details in the object photographed. Inasmuch as the film in use greatly affects the ultimate resolving power, one can not be too hypercritical when testing the lens.—Ed.

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one which you know is capable of giving satisfactory negatives.

Fine resolving power seems to be an inherent quality in the best of lenses, and you can spot it instantly with this test. With a truly excellent lens, the focusing operation with the microscope is easy, and the lines of the scale jump into sharp relief quickly. With lenses not so good, it seems that you have trouble getting the image into focus—and try as you will, the sharp focus will continue to be elusive.

Scratches, solarization, or even dust on the surfaces seem to make no difference with a truly fine lens. Sometimes a dirty-looking, badly marred lens will cut those hundredth-inch lines as sharply as you could wish, while no amount of tinkering or polishing will make a soft lens improve the image which it casts at the first test.

Calculating Resolving Power

Should you wish to calculate the resolving power of the lens, make several tests until you find the greatest distance from the scale at which the lens will show definition of the hundredth-inch lines, then measure that distance in inches. Divide this distance by twice the focal length of the lens, in inches, and multiply the quotient by one hundred, which will give you the resolving power in lines per inch.

To reduce the resolving power to lines per millimeter, simply divide the resolving power in lines per inch by twenty-five since one inch equals almost exactly twenty-five millimeters.

The formula is:

$$\frac{\text{Lens-to-scale distance (in inches)} \times 100}{\text{Focal length of lens (in inches)} \times 2} = \text{Resolving power in lines per inch}$$

To make full use of medium-speed fine grain film, a lens should have a resolving power of 1,500 lines per inch, or 60 lines per millimeter. A good Tessar will usually resolve 1750 lines per inch, or 70 per millimeter, and occasionally an extraordinary lens will be found which will resolve several thousand lines per inch.

Those rare lenses with superb resolving power and color correction won't come into their own, however, until the film

manufacturers produce a film which combines high resolving power with high speed, wide latitude, and good color balance.

Actually, special emulsions have been made which have resolving powers as high as 12,500 lines per inch, but they lack the other qualities desirable in film for general use.

It is to be hoped that while learning the sharpness of your lens with this test, you will also learn the value of a tripod in assuring sharpness in your pictures. The microscope will show you impressively how the slightest movement will destroy the sharpness of the image cast by the finest lens. The best way to avoid camera movement is, of course, to employ a tripod.

Another way to escape unsharpness caused by movement is to employ speed-lights when shooting indoors, and if you use speedlights you will find the microscope test particularly valuable in checking your lens equipment.

Also, you will find this critical testing of lenses very worthwhile if you shoot much color, because color film for best results demands the finest of lens performance.



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CAMERA CLUB NEWS AND IDEAS

Anasco announces that their program, "Filters and Their Use in Photography," available on loan to Camera Clubs, has been revised and enlarged, especially by the inclusion and addition of numerous slides in color, more clearly illustrating the points under consideration. This revision includes an illustration of a sky and cloud-filled landscape, shown first in color (Anesco Color original transparencies) and then the same scene is shown in black and white, first with no filters, and then through light yellow, medium yellow, dark yellow and red filters respectively.

A closing summary has been added which strikingly illustrates the filter action under study. In this series, four color objects—red, yellow, green and blue—are shown in color and, in the same slide, the monochromatic rendition in black and white when photographed with no filter, then through a yellow, a green, a red and a blue filter respectively. This provides a very unusual study of filter action in black and white, in direct comparison to the original colors of the objects themselves.

Clubs will find this program a very clear, concise and instructive presentation of the subject, "Filters and Their Use in Photography."

Camera Clubs wishing to have this program should make early reservations. Several alternate dates would be appreciated, in order that schedules may be arranged to provide for all requests.

Write Camera Club Department, Anasco, Binghamton, New York.

DIXIE CAMERA CLUB of Atlanta, barely 2 years of age, is making a strong bid as one of the leading clubs of the Southland. Let editor Ed Gambrell, writing in the *Southern Exposure*, speak for the club:

"This is the biggest edition (16 pages) of *Southern Exposure* that has ever gone to press, and, as any introduction would appropriately comment, it is fittingly so. For, despite Russian aggression, the southern admission that the Yankees have been running the Democratic party all along and there isn't much they can do about it, despite the shrouds that our beloved women are now draping around themselves and the high prices and scarcity of things photographic, Atlanta is well into its biggest photographic year and the DIXIE CAMERA CLUB is well into its biggest year, though it be but its second."

"In this issue are nine pages of the club's better photographs—the Prints-of-the-Year for 1947 and the winning prints from our January and February salons—and there are pictures on nearly every other page."

"These pictures represent the work of 13 of our members and, but for the season, the limited number of prints we could afford to reproduce and the vagaries of the judges, we could have had many more of comparable quality.

"The club is not only turning out more and better prints, but it is making preparations for its first national salon this summer.

"We are proud of our accomplishments—a big, friendly, democratic membership, a large number of print makers, a high quality of prints, and a national salon—all in less than two years time."

NEW YORK COLOR SLIDE CLUB INC. sends along an invitation for color shooters to visit the club. Meetings are held on the first and third Friday of each month in the auditorium of the Central High School for Needle Trades, 24th Street between 7th and 8th Avenues, at 8 P.M. Further information may be obtained from Norman Rothschild, 87 Bay 31st St., Brooklyn 14, N.Y.

Ed Wolff & Associates, 428 Taylor Building, Rochester 4, New York, advertising agency for Wollensak, is seeking black and white, 8 x 10 prints and color transparencies, 3 1/4 x 4 1/4 or larger made with Wollensak lenses and suitable for use in the lens manufacturer's advertising. The agency pointed out that pictures selected for possible use as future advertising material will be purchased at a good price. Interested participants, it was stated, should write the agency for details before submitting pictures.

Frin Vanden reports in the **CHICAGO COLOR CAMERA CLUB Projector** something we didn't know about our contributing editor Karl Baumgaertel of San Francisco. Seems that after many years and many thousands of color slides, including many accepted for exhibition and reproduction, Karl has finally reached the pinnacle of photographic success. For the very first time, one of his slides, recently returned from the processor, carried round its circumference, the coveted yellow band expressing the manufacturer's opinion that it would make a good print!

At the last meeting of the **DETROIT CAMERA CLUB**, with headquarters in the Detroit Institute of Arts, the following were elected to serve as officers for 1948:

Jean Elwell	President
Walter Musial	Vice-President
Bertram Abrams	Secretary
Clark Walborn	Treasurer

Harvey Croze, William Bond and Bert Abrams of the Entertainment Committee are making plans for a gala affair to celebrate the **DETROIT CAMERA CLUB'S 50th Anniversary**.

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Noted newspaper cameraman Ray Platnick (of *PM*) will place his camera on the shelf each week for 15 minutes and conduct his own radio show—*Camera Column of the Air*, directed to the problems of the amateur photographer.

Radio station WHLI in Hempstead, Long Island will feature the program each Saturday morning from 8:45 until 9.

Guest speakers from both the professional and amateur fields will chat informally with Ray from his mythical photo-lab darkroom. The first broadcast was aired April 3rd.

Ray has been covering news events on Long Island and Metropolitan New York for the past 15 years. During his 3 years in the U. S. Coast Guard as a Chief Photographer, he served overseas in Greenland and participated in three bloody invasions of the Gilbert and Marshall Atolls in the Pacific. Fleet Admiral William Leahy presented Ray with a Naval Citation for his photographic war coverage.

Ray springs from a long line of active press photographers. His father, sister and brothers all are shooting pictures for NY Newspapers and photo-syndicates of spot-news happenings on Long Island.

FOTO ALPINE C. C. members stared bug-eyed recently when they were treated to a set of unusual slides made by member Bob Snively of Seattle. Many of the pictures were made in an Exacta with 8½-, 30- and 60-inch lenses and the amazing results with objectives of such astronomical focal length can well be imagined. One of the most complete series of slides taken on an ascent of Mt. Ranier was also shown by Snively.

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Officers who will guide the destinies of the Goats this year were recently elected and are: George Kinkade, Auburn, chairman; John Mardesich, Seattle, vice-chairman; Jon Rasmussen, Seattle, secretary-treasurer. Other members, board of directors: Fred Bannister, Jr., Enumclaw; John Lincoln, Ray Brandes, John Karner, all of Seattle.

—*WCCC Bulletin.*

This is the sort of thing that could only happen to Weegee. The other day he got someone else's suit from the cleaners and after trying it on and finding it wouldn't fit, took it back and demanded his own. The proprietor was apologetic but said he couldn't possibly find a "blue suit size about 44" on a moment's notice. Maybe Weegee could come back after five when he'd have a chance to look thoroughly?

"It'll take only three minutes," said Weegee. "Just look for the only suit in the shop with zippers on all the pockets."

It took two minutes. But as we said, this sort of thing only happens to Weegee.

—*American Society of Magazine Photographers Inc. "Newsletter."*

Four patents on cameras for making instantaneous pictures were issued to Edw. Land, President of Polaroid Corporation, on February 10th last. These cameras turn out a finished picture in one minute after the shutter is snapped.

Described in the patents are several general forms of cameras, some for roll film, others for packs. All produce a positive print in permanent form ready for use. They contain no tanks; the picture is taken from the camera dry and requires no further processing.

First announced at a meeting of the Optical Society of America in February, 1947, no date has yet been set for their commercial introduction. Patent applications showed cameras of the general size and shape of conventional folding cameras. An account of this "one minute process" appeared in *MINICAM*, May, 1947.

"Sheer necromancy, that's what it is," commented Conrad Emanuelson on a recent picture-hunting expedition. Reports are that Connie recently was seeking a good railroad shot with Len Bennett and Ray Boedigheimer and was preparing to make a shot of a likely subject. As the unsuspecting Connie started to view his subject through the ground glass he fell victim to a practical joker in a nearby switch tower. Just as our president prepared to make his shot, the switchman applied a mechanical control which started the tracks moving back and forth. Imagine Connie's consternation as he viewed the tracks jogging back and forth with no one around. What a way that railroader picks to toy with a serious photographer's effort. He should have a train run right through his roundhouse. . . .

—*Green Briar Honorable Mention.*

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Synchro-Sunlight

(Continued from page 56)

the ground or sand for a background. If it is desirable to keep the camera level, a building or other large surface can be used as a background, providing the subject is placed fairly close to it.

How to Use Guide Numbers for Synchro-Sunlight

As we pointed out above, sunlight is not taken into consideration when a subject is strongly backlit so that important



VERONICA LAKE'S hair would not have had the proper texture without flash to brighten the shadows in this against-the-light picture.

features facing the camera are buried in shadow. In this case, exposure is made according to the flash guide number that would apply if the subject were being photographed by flash alone. The procedure in making other synchro-sunlight shots in which the sun does contribute subject illumination is as follows:

1. Measure the sunlight reflected from the subject to determine what the correct exposure would be *without* flash or fill-in. Let's suppose that we find the correct exposure to be 1/100th. second at F:22.

2. Flashguide numbers are printed on the cartons of the G.E. or Wabash bulbs you are using. This is the flash guide that would be used if exposure were to be made by flash alone. Let us suppose that the flash guide number for the bulb you are using is 220.

3. Divide the flash guide number by the F stop indicated in step 1 above. In our theoretical example, this would be 220 divided by F:22 — which equals 10. The figure 10, then, represents the number of feet away from the subject at which the flash will equal that of sunlight for balance in exposure. This distance (10 feet) will result in a flash of light that will balance the sunlight and destroy deep shadows. As a matter of actual practice, however, I recommend that the bulb be fired at 20% greater distance — or 12 feet.

This permits the sunlight slightly to overbalance the flash, and usually produces a more natural-looking picture with better modeling than is otherwise obtained.

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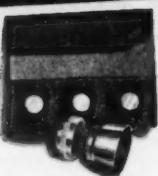
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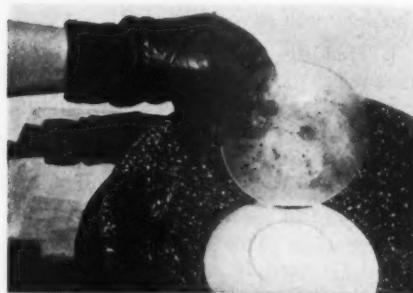
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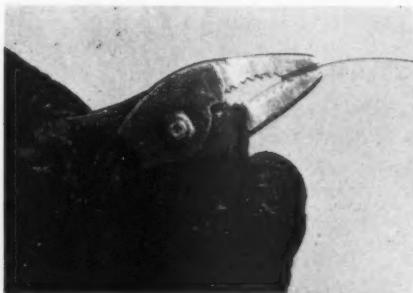
Print Your Name
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Plastic Safety Shield for Midget Flash Reflectors

(Continued from page 60)



TO BEND TABS heat only the area of the blank immediately surrounding the point at which the bend will occur. The tab may be bent with pliers while holding it under the hot water, or it may be removed from the water and bent quickly while the plastic is still pliable. Do not try to force the bend. If the plastic resists bending, do not continue bending until you have re-heated it.



BEND THE TABS approximately at right angles to the shield surface near the edge. The exact degree of bend may be determined by a trial fitting of the shield to the flash reflector. The tabs should fit easily over the reflector rim without any forcing. Shields are light in weight and a very slight gripping action is all that is necessary to prevent them from accidentally falling loose even if the flash unit is given a

vigorous shaking. If the tabs are bent at too sharp an angle, so that it is necessary to force the shield onto the reflector, the repeated flexing at the bend will cause them to break off.

Tying the rubber retaining band between the two drilled tabs completes the shield for use, unless it is desired to dye the plastic blue so that it will serve as a correcting filter for white flash lamps when used with daylight color film.



A GLASS PIE PLATE is a good container for the blue cold dip plastic dye with which the reflector shields may be colored. The dye will wash off the glassware quite readily when you are through with it. Since the density of the color obtained increases with the length of time that the plastic is submerged in the dye, it is a good idea to determine the correct dyeing time by first dipping scraps of plastic in much the same manner that test strips are made when printing photographs. The test strip may be submerged progressively deeper in the solution, say at one minute intervals, and the strip of the correct density selected by comparison with one of the blue filters used for correcting the light of white flash lamps for use with daylight color film. If such a filter is not available, a scrap of the blue lacquer coating from one of the "B" flash lamps will do as a color guide. The plastic should be rinsed in cold water as soon as it is removed from the dye bath. If in doubt as to the correctness of the blue density, make the first shield a bit on the light side, and test it by using it to filter the flash of a white lamp which is the sole source of illumination for a photograph on daylight color film. When making test exposures it is best to work where the walls or other reflecting surfaces are of a neutral tone. Gray or white would be ideal. If the test transparency is too "warm" or reddish in color this may be corrected by re-dipping the shield in the dye until sufficient blue has been added. For my own working conditions I have found that a total dyeing time of eight minutes produces a satisfactory flash lamp filter shield.

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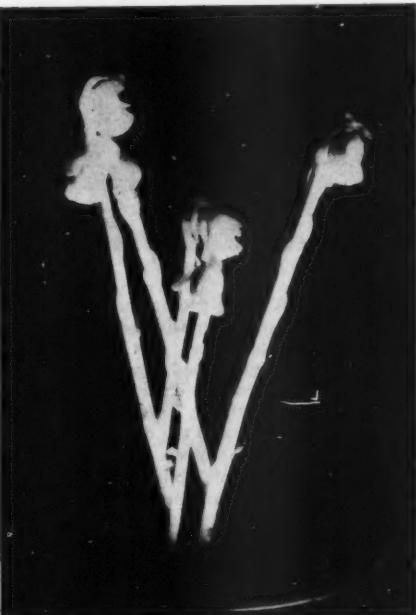
**THE
LAST WORD**

(Continued from page 10)

at the right exposure?

You can bet your best filter though, that the next time I get in those Penna. mountains it will be a lot different.

Baltimore, Md. KARL A. FULTZ.



* Monotropas, as explained in the April MINICAM, are a pallid white because they have no green, food-making pigment. Sometimes called "Indian Pipes" or "Corpse Plants," they feed upon dead and decaying materials like mushrooms.—Ed.

Correction Dept.

Dear Sir:

I should like to take exception to author Philip H. Bailey's statement in "How to Shoot Action in Color" (April issue) that the lens aperture on a camera can be made one stop smaller for each flash bulb used.

In order to shoot one stop smaller from any given aperture, it is necessary to have twice the amount of light. Because two bulbs at the same position give twice the amount of light that only one gives, you can go one stop smaller. In order to use another stop smaller, however, it is necessary to double the amount of light again, i. e.: use four bulbs. To get

another stop, eight bulbs must be used and so on in that geometric ratio. The above assumes, of course, that all of the bulbs are at one position. If more than one bulb is used and the bulbs are at different positions—Jack Stevens' set up for the midget racer, for example—the exposure is based on the bulb that is closest to the subject and gives it the most illumination.

The above can be verified by any photographer who uses extension flash technique. This point was brought forth and emphasized at the Seventh Annual Short Course in News Photography at Kent State University (Kent, Ohio) recently by Joseph Costa, *New York Mirror*, Frank Scherschel, *Life*, Gordon Kuster, *Columbus Dispatch* and Don Mohler, General Electric (Nela Park).

P. O. Box 846, REES L. EVANS,
Windham, Ohio *Free Lance Photographer.*

- An addition to Mr. Bailey's statement which would have made it both clear and correct somehow failed to get set in linotype and its omission was not detected until most of the issue had been printed. MINICAM is grateful to all the readers who wrote in about the geometric ratio existing between lens stops and the number of flash bulbs used.—Ed.

Pin-money Idea

Dear Editor:

I've got a way for making pin-money that has worked for me and would work just as well for other amateur photographers. Occasionally I take photos of new-born babies in the Maternity Department of a nearby hospital and sell prints to proud fathers. With almost every father a "sure sale" it is an easy way to earn pin-money for photo supplies when your cash runs low.

Baldwin, N. Y.

DIANA MARS

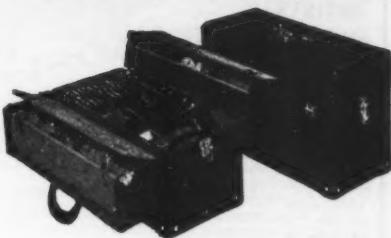
- In the future MINICAM will print original ideas on how to earn "Pin-money With Your Camera" from time to time. For each unillustrated idea accepted for the column, readers will be paid \$3. For each illustrated idea accepted, payment will be \$5. All ideas should be submitted to the "Pin Money Editor," Minicam, 22 East 12th Street, Cincinnati 10, Ohio. Only ideas accompanied by self-addressed stamped envelopes will be returned in the event that they are not used. —Ed.

Trashy Ads

Sirs:

I have been reading MINICAM since the first issue and have an almost complete file of the magazine. I have enjoyed it very much, but there is one feature I hate to see creep into the magazine, namely, trashy-looking ads for art slides. These make MINICAM look like a cheap pulp magazine, and make me hesitate to show it to my friends. Frankly, I think nude photography has a good, logical place in photographic endeavors, but I am afraid too much of the so-called art is of the French postcard type. If MINICAM and other photographic magazines do not clean house, sooner or later it will bring disrepute on a much misunder-

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stood branch of photography, and react to the detriment of pictorial photography in general.
Brady, Texas.

CECIL R. NELIN.

• Your views are well put, Mr. Nelin. We wish more readers who really have something worth saying would favor us with their opinions. That is what this column is for.—Ed.

Minicam in England

Sirs:

Judging by recent letters published, it seems that some of your British readers are not aware that subscriptions for many U.S. periodicals can be made through quite a number of firms in England. I, myself, pay 18 shillings for 12 months "MINICAM" and have just renewed my sub. The address of these firms appear in the British photographic magazines, so it is not quite fair to impose too much on U.S. generosity.

The books we have great difficulty in securing are the various annuals, but we usually manage to secure anything if we need it badly enough. I certainly enjoy your mag. and hope to receive it for many years to come.

London, Eng. ERNEST W. J. FIELD.

Sirs:

In the March issue of MINICAM PHOTOGRAPHY, I notice that you refer to a request for old copies of your journal. You publish also, two letters received on this matter, in both of which American readers demonstrate great kindness in taking out a year's subscription for amateurs in England. Further, you invite other people to make similar subscriptions to help these "in foreign countries where the block on dollars excludes American magazines."

As far as Great Britain is concerned and in spite of the great strain on our dollar resources no such block exists. If anyone in this country wishes to receive MINICAM, all they have to do is to place a subscription with one of the larger news agents here and pay in sterling. It is also possible to obtain such back numbers as are available from the publishers in a similar way.

Possibly the English readers who wrote you were subscribers already, and wished merely to obtain old copies which might be of no use to their owners. At any rate, I think you should inform American readers that there is no need for them to make subscriptions for British camera fans. While very much appreciating their kindness and the spirit in which it is meant, the average British citizen has not yet reached the point where he is unwilling to pay his way when means exist for him to do so.

London, Eng. J. G. GAULT.

Camera Manufacturer's Addresses

Sirs:

A Robot II Camera was illustrated in your December Camera Survey. Can you give me the address of the Burleigh Brooks Co.?

Alhambra, Calif. ADRIAN WADDELL.

• Burleigh Brook's address is 120 W. 42nd St., New York 17. All other camera manufacturers' addresses appear on page 109 of the January MINICAM.—Ed.

OUTDOOR COLOR PHOTOGRAPHY WITH THE CC14 FILTER

(Continued from page 50)

prevent the film's slight overindulgence in these colors and achieve a transparency with the light colors more nearly as our eyes see them.

Warming Cool Scenes

We all know that the latitude of color film is extremely limited, compared with that of black and white films. Very often, outdoor scenes will tempt us where the foreground is illuminated only by light from the sky and, consequently, is excessively cool. The background of the scene is in full sunlight. Such scenes are often with us in the mountains, where one is likely to come across them at each turn of a road. What a contrast range! And how difficult to hold some semblance of detail in either! The real problem is how to keep foreground objects from being completely swamped by our cool colors. Here again, as in full sunlight, the filters will produce a warmer rendering of the objects in the shade, so that detail, such as plants and flowers, will photograph more nearly as we actually see them. In this connection, we should point out that contrast and color saturation is inherently lower in scenes or portions of scenes illuminated only by skylight. Here, the areas are hidden from the direct rays of the sun and the only light that we receive in the scene is that light which is reflected from the sky, plus some light which may be reflected from surrounding surfaces. Although Mother Nature has gone a long way towards helping us by creating this soft, diffused sunlight, we still would do well to slip on our filter and give the weaker colors a strong boost. Changing sky conditions may even help further. If we wait until the late afternoon, the light becomes much weaker. With a clear overhead sky reflecting a considerable amount of light, the contrast range is greatly reduced and we have a greater opportunity to take advantage of our low latitude of color film.

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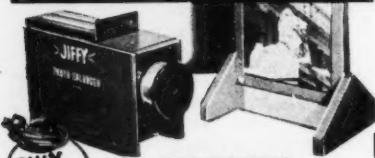
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Out-of-Balance Skylight

Back in the days when I first tackled color film, one of my first objectives was to photograph a lovely lady I know, with light blond hair, gleaming white teeth and a very delicate complexion. I posed her against the north wall of a house in open shade to get rid of objectionable eye and chin shadows from the overhead sun. When I received the transparencies from the processing station, I was startled to notice strong bluish highlights in her hair, blue teeth and a complexion color neutralized by the excess blue. What I failed to realize then was that this north light may be soft and pleasing for modeling purposes, but it is strongly out-of-balance in blue—reflected from a north sky. Don't blame film processing. It is a condition of the light; an unbalanced color quality which the film recognized and which we ignored. But it is still there! In order to partially overcome this excess blue, the CC15 filter would be more effective.

The greatest danger in recognizing the true place of these filters in outdoor color photography lies in its negative aspect; we must never use them indiscriminately. Just as we must be careful when we use them indoors to compensate for excessive warmth we use judicious choice in using them outdoors. These filters are not a cure-all for all problems of color photography, and it may be that some will mistakenly believe that they will automatically solve all their color problems. This they will not do. But this does not stop one from *experimenting within the effective horizons* of these filters in order to heighten their usefulness to us in attacking these ever-present color problems. No filter ever becomes a substitute for clear-headed thinking, and these are no exception. With a minimum of imagination and careful observance of the limitations and assets of these filters, the color photographer will discover many more situations wherein their usefulness to him will be greatly increased.

COWBOYS AND INDIANS

(Continued from page 46)

scenes, better confine your action to three or four characters.

Keep in mind that this is a burlesque; but don't let the kids feel it. The burlesque part comes into play by the seriousness with which one child will land on another who refuses to take the whole thing seriously; by the fragmentary way in which the story though held together by your shooting script, still continually refreshes itself as the actors stray into a side issue of their own. If the kids play the shooting sequence "straight," that is the way they naturally would do it, it will be burlesque. But if they get the idea that you are making fun of them, they in turn, will make faces, grimace and point at each other and laugh.

When you get your lights and camera set up, you'll be thankful that you sent the rest of the cast home. Indoor scenes may include the holdup of the cattlemen's bank, a shot of the interior of the rustler's cabin or, if you want to continue the use of your ingenuity, small sets can be built in the basement.

Hold direction to a minimum. Once the action gets going you'll find that your voice will rarely be heard anyway. First, you should outline the proposed action in a few words, then tell the cast to go to it. They will remember for a couple of minutes perhaps, but from there on it's going to be everyone for himself, including you. When you see a bit of interesting action, film it. You may never get it reenacted, no matter how much coaching you do.

Even if this is going to be an action picture, a constant stream of it won't hold interest too long unless you throw in a few close-ups for variety. These may be captured during a running gun battle among the rocks or when the hero says "Better reach for the sky, podner!" And be sure to get the one in the manner of the modern cowboy who produces the inevitable guitar and strums a haunting

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western tune to the rancher's daughter while the sheriff and posse are out chasing the nasty rustlers.

Most youngsters in lieu of ammunition furnish their own sound effects complete with facial expressions. Some are priceless.

To get some order out of the chaos facing you, better sort out the cast. Inasmuch as this began as an opus of the old West, starring Junior—we'll let him play the part of "Fearless Roy." Others down the line will include: Rancher's Daughter, the Rancher, Cowboys (five or six), Indians (about same amount), and three or four "Outlaws", with one identified as the leader. In case your cast of young males seem a bit hostile to the presence of a girl in the cast (and most of them do at that age), the part of the rancher's daughter can be deleted without seriously affecting the action or the story.

Sample script might run something like this:

DEATH TO THE OUTLAWS

(Final Shooting Script)

SCENE 1

(Camera on tripod, panning): Action—Stagecoach rushing toward camera. Outlaws, wearing masks, in full chase. Rancher's daughter is passenger on stagecoach. Pan with action to about 20 feet (if you are fast), then grab camera and tripod and run for your life.

SCENE 2

Holdup of stagecoach. (Medium close-up. Passengers alight and outlaws search victims for money and jewels. The jewel can be a golf ball wrapped in tissue paper. Rancher's daughter can be introduced by close-up. She threatens vengeance on the outlaws when "Fearless Roy" gets there.

SCENE 3

Appearance of Fearless Roy. (Camera from low angle.) Dramatic entrance as he rides trusty steed over brow of hill. Move in for medium close-up as he pauses to discover the holdup. Pan to long shot as he dashes madly down hill toward scene—shooting as he rides. (Insert scene of panic among outlaws as they scatter.)

SCENE 4

Medium shot of rancher's daughter thanking Junior for saving her money and jewels. Stagecoach reloads for trip to ranch. Junior rides guard.

SCENE 5

All is peaceful. Junior can be seen singing to the accompaniment of his trusty guitar. The rancher's daughter listens in ecstasy. (In case rancher's daughter is deleted from cast, this scene can be changed to cowboys grouped around campfire.)

Suddenly their attention is attracted by Indians. They have captured the rancher and are taking him away to be burned at the stake. Close-ups show rancher's daughter in terrific tizzy begging Junior to go to the rescue. Junior discards guitar, mounts steed and gallops to battle the Indians.

SCENE 6

Running gun battle among the rocks. (The big scene.) Junior is joined by other cowboys that the rancher's daughter has thoughtfully rounded up. A battle royal ensues. Work in several close-ups, facial expressions, and Indians biting the dust. In the midst of the melee, Junior manages to rescue the rancher from the stake. Indians are finally dispersed with much commotion and loss of personnel.

SCENE 7

Battle over, the rancher's daughter rushes in to thank Junior for his fearless deeds. He bashfully admits that "twern't nothing, ma'am". Final fade.

With the last scene shot and film back from processing, editing might bring back your continuity. Appropriate titles and background music can be worked in. (See "*There's Magic in Music*," MINICAM, August 1947.) You can also add sound effects and with one of the wire recorders that can be obtained on the market these days, a variety of sounds and comment can be added — even to Juniors voice in appropriate spots.

And for the sake of keeping peace, don't cut out Mrs. Crane's little boy Joe just because his belt broke and his pants fell down right in the middle of a dramatic scene. Perhaps she won't mind if

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everyone laughs, but, if Joe will be upset about it, the chances are the other kids wouldn't care for it either.

If anything has survived the filming of this first exciting horse opera, by all means try and preserve it for the next one. You will have found that you enjoyed the filming as much as the kids did acting it out. Often the kids have ideas of their own about what constitutes a good western movie. If so, let them plan it themselves. In the end you'll get the same result—action and plenty of it. Where else can you get real blood on the screen for so little loss of your own?

THE END

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After a long session in a stuffy dark-room a group of shutterbugs may think in terms of refreshment. In a few hours of a spare evening you can prepare a serving tray which will surprise and perhaps startle your friends.

A carrier designed for 6 twelve-ounce bottles of soft drinks (preferably metal) is painted red (safe-light color). When the paint is dry an assortment of labels which can be purchased in booklet form at any photography shop is pasted at random on the outside of the carrier. The carrier will hold 6 ordinary 8 or 10-ounce glasses upon each of which is pasted a label of your choice. The labels and a narrow strip of tape approximately $\frac{1}{8}$ " around the edges are covered with clear varnish or clear nail polish. This will prevent their washing off almost indefinitely.



The fun of using this set when completed can be enhanced by a proper distribution of the glasses. For example, the fast drinker can be given the "short stop"; the bashful one the "first developer," and the blonde, if there is one in the crowd, the "bleach," etc., according to your whims. — Charles G. Mulligan.

Exposure

(Continued from page 40)

when you are located inside a building and wish to take a picture of the view from an opening or window. Obviously, you cannot get an incident light reading, within the room, of the light that is illuminating your subject. Or you may be on the wrong side of a mountain and wish to take a panorama of a valley. These few times it will be necessary for you to employ an accessory known as a Photogrid*, if you are using a Norwood meter. This device transforms the Norwood Director* into a reflected light meter.

The Photodisk* replaces the Photosphere* when it is desired to duplicate lighting contrast. It is an important ac-

cessory in obtaining contrast or balance in lighting when copying, making portraits, or other work with artificial lighting. It is also convenient to use when balancing outdoor light by the use of reflectors or fill-in lights.

With color becoming the general rule in cinematography, and increasing its inroads into the field of black-and-white still photography, an incident light meter may soon be considered a "must." It solves a difficult problem in a simple way by measuring *incident* light—which, after all, is the light by which we are enabled to judge the beauty of the things around us.

* Norwood Director, Photosphere, Photogrid, and Photodisk are manufactured by the American Bolex Company, Inc., 521 Fifth Avenue, New York 17, New York.

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Closing Date	Name of Salon	For Entry Blank, Write to	Number of Prints and Entry Fee	Dates Open to Public
Exhibit to see:	★1948 Baltimore International Salon of Photography.			Museum of Art, Baltimore, Md., June 4-30
Exhibit to see:	★Twelfth Virginia Photographic Salon.			Valentine Museum, Richmond, Va., June 13-30
June 1	★First Dixie National Salon of Photography.	James K. Jobson, Chairman, 108 Tenth St., N. E., Atlanta, Ga.	4 monochrome \$1.00	Carnegie Library, Atlanta, Ga., July 1-15
June 9	Memphis Pictorialists 11th Annual Salon.	H. C. Wilson, Memphis Photo Supply Co., 83 Madison Ave., Memphis 1, Tenn.	4 \$1.00	Brook Art Gallery, Overton Park, Memphis, Tenn., July
June 10	★Tenth National Finger Lakes Salon of Photography.	Cayuga Museum of History and Art, 203 Genesee St., Auburn, N. Y.	4 \$1.00	Cayuga Museum of History and Art, Auburn, N. Y., June 12-July 10
June 23	★Fifth International Salon of The Littitz Springs Camera Club.	David E. Miller, Salon Director, 37 E. Lincoln Ave., Littitz, Pa.	4 \$1.00	R. M. Spach Furniture Store, Littitz, Pa., July 4-11
July 3	★Fourth Salt Lake International Color Slide Exhibit.	Dr. C. E. Barrett, Salon Chairman, Box 246, Salt Lake City, Utah.	4 \$1.00	State Capitol, Salt Lake City, Utah, July 16-24
July 17	Falmouth Camera Club's Fourth International Exhibition.	C. E. Brooking, Secretary, "Cotswold", Trescobear Road, Falmouth, Cornwall, England.	4 \$1.00	Y.M.C.A., Bank House, Falmouth, Cornwall, England, Aug. 4-14
July 24	Royal Photographic Society's 93rd Annual Exhibition.	Secretary, The Royal Photographic Society, 16 Princes Gate, London, S. W. 7.	4 prints and/or color slides None	16 Princes Gate, London, Sept. 9-Oct. 30
July 28 (Pictorial) August 7 (Color)	★Ninth Annual North American Salon of Photography.	Grant Duggins, State Agricultural Society, P. O. Box 2036, Sacramento 9, Calif.	4 prints and/or slides \$1.00 each section	Fine Arts Bldg., California State Fair, Sacramento, Calif., Sept. 2-12
August 4	Thirty-ninth Annual International Exhibition of London Salon of Photography.	The Hon. Secretary, London Salon of Photography, 26-27, Conduit St., New Bond St., London, W. 1.	6 5s.	Galleries of The Royal Society of Painters in Water Colours, 26-27, Conduit St., New Bond St., London, W. 1., Sept. 11-Oct. 9
September 3	Thirteenth Annual Western Ontario International Salon of Photography.	A. E. Adams, Salon Chairman, 923 Maitland St., London, Ontario, Canada.	4 prints, any medium \$1.00 each class	London Camera Club, 212½ Dundas St., London, Ont., Canada, Sept. 21-Oct. 5
September 7	★Northwest International Salon of Photography.	Western Washington Fair Association, Puyallup, Wash.	4 \$1.00	Western Washington Fair, Puyallup, Wash., Sept. 18-26
September 8	★Third Columbus International Exhibition of Photography.	Fred H. Braunlin, Chairman, 456 Elsmere St., Columbus 6, Ohio.	4 prints and/or slides, 3 divisions \$1.00 each division	Columbus Gallery of Fine Arts, Columbus, Ohio, Sept. 15-Oct. 5
September 25	★Fifth Chicago International Color Slide Exhibit.	Philip R. Kephart, Chairman, 328 Franklin Ave., River Forest, Ill.	4 color slides \$1.00	Chicago Historical Society, Chicago, Ill., Oct. 12-15

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